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# CONTENTS

FLIGHT JOURNAL | JUNE 2015

## FEATURES

### 14 | F-104

The Missile with a Man in it  
By Barrett Tillman

### 24 | Mosquito!

Black Ops in the Wooden Wonder  
By Lt. Marvin R. Edwards, USAAF (Ret.), as told to and  
written by James P. Busha

### 34 | My Target is What?!

Embarrassing Non-shootdowns  
By R.R. 'Boom' Powell

### 42 | "Jumpin' Jacques"

A Unique Mustang  
By Robert "Cricket" Renner

### 52 | Hawk-33

A Day in the Life of a Vietnam Cobra Pilot  
By Thomas McKelvey Cleaver

## COLUMNS

### 6 | *Flight Journal* Contributors

### 8 | Editorial

### 10 | Airdrop

### 11 | On the Web

### 32 | One of a Kind

The Waterman "Whatsit?"  
By Joe Gertler

### 40 | Classics

Loening C-2C Air Yacht  
By Joe Gertler

### 50 | Iconic Firepower

Germany's V-1 Buzz Bomb:  
The First Effective Drone  
By Barrett Tillman

### 60 | Flight Gear

### 62 | Gallery

Lockheed PV-2 Harpoon:  
The Little Known Warrior  
By Luigiano Caliaro

### 66 | Tailview

Do It Now  
By Barrett Tillman





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**ON THE COVER:** WW II fighters are rare, and a survivor that actually saw combat is ultra rare. That's why *Flight Journal* is pleased that photographer John Dibbs let us use his images of *Jumpin' Jacques*, which did see combat, for the cover of this issue. (Photo by John Dibbs/[planepicture.com](http://planepicture.com))

**THIS PAGE:** Looking like a portrait of a tired warrior at the end of a hard mission, *Jumpin' Jacques* enjoys the evening. (Photo by John Dibbs/[planepicture.com](http://planepicture.com))





## Barrett Tillman

### *F-105: The Missile With a Man In it*

I have two memories of the F-104. The first was the late-night TV signoff with a Starfighter and the poem "High Flight." Decades later at the NAS Miramar airshow, an eerie howl caused thousands of people to crane their necks, seeking the source of the sound. And there it was—a polished two-seat F-104 entering the break. You should've seen the gorgeous blonde climbing out of the rear seat. But that's another story...



## James P. Busha

### *Sting of the Black Mosquito*

Black ops and shadow espionage have been around for a long time, but during WW II, I thought it mainly applied to agents on the ground. Imagine my surprise when I had the opportunity to interview Marvin Edwards as he spoke of his early days, not only as an operator with OSS, but as a navigator on B-24s and Mosquitos. His tales of orbiting high over Berlin, undetected, while talking to operatives on the ground were amazing.



## "Cricket" Renner

### *"Jumpin' Jacques": A Unique Mustang*

Although now retired as a USAF fighter pilot, I enjoy meeting pilots of prior generations, those who defended the freedom we enjoy today. Reading about the exploits of World War II fighter pilots was one thing that motivated me to fly, as well as the fact that my dad was a fighter pilot. Mustangs in the Pacific were relatively unknown to me prior to talking with the Young family and Peter Teichman, and I appreciate their input in putting this article together.



## R.R. "Boom" Powell

### *My Target is WHAT?*

Aviation is loaded with sometimes embarrassing tales, all of which bear repeating. I heard of an unsuccessful shoot down of a runaway balloon heading for Cuba while I was at an Officers Club Friday happy hour. Then I was in the training squadron VT-23 soon after a pilotless jet trainer wandered out over the city, and a Marine captain, one of my instructors, failed to bring it down. Then, there was the F-89 Scorpion failing to down an errant Wildcat drone. Embarrassing!



## Thomas McKelvey Cleaver

### *Hawk-33: A Day in the Life of a Cobra Pilot*

I was fortunate to meet Major Terry Morris through my friend and former gunship pilot, Floyd Werner. I've long thought that the helicopter gunship pilots of the Vietnam War were that conflict's version of the frontline fighter pilots of World War I and World War II. When I found that Terry had flown combat during Operation Lam Song-719, one of the least-known events of the war, I knew I had to get his story.



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# Mosquitos, Cobras, Zippers and Runaway Balloons

BY BUDD DAVISSON



F-104S-ASA-M Starfighters from Italian Air Force's 20th Squadron / 4th Wing based at Grosseto Air Force Base. They operated these aircraft until 2004. (Photo by Katsuhiko Tokunaga/Check-Six)

**What does the above mean?** It means that this issue ranges from the serious to the borderline silly. How else would you describe the differences between being a Cobra pilot in Vietnam or a F-104 “Zipper” pilot at 2.5 Mach (very serious) and a Crusader pilot who couldn’t shoot down a balloon or a flight of F-89 Scorpions that fired 208 rockets at an out-of-control F6F drone and totally missed it (laughably silly)?

About those 208 rockets: when the ground controller lost control of the F6F Hellcat target drone in the desert north of Los Angeles, the solution seemed simple. Send fighters after it. However, apparently no one thought about where the rockets would wind up.

And then there’s the F11F Tigercat that refused to come down after its pilot ejected and the hotshot captain on its tail with hot guns couldn’t bring it down. Oh, yeah ... then there’s the Tiger that shot itself down. Embarrassing! “Boom” Powell sheds light on numerous such episodes in “My Target is WHAT?”

Jim Busha lets us ride along with a navigator who, among other things, became instrumental in the use of the Mosquito for clandestine operations behind German lines. Not many aviators can talk about what it was like to circle high over Berlin in the dark while communicating with OSS operatives on the ground. The black Mosquitos pulled off some daring stuff during WW II that we seldom hear about.

At the other end of the performance spectrum are the tales

Barrett Tillman brings us from pilots who flew the Lockheed F-104 Starfighter, more affectionately known as the “Zipper” or “Manned Missile.” With only seven feet of wing on each side, here was an airplane that, when first flown in 1956, was so far out on the edges of imagination that it could have been an “X-fighter” from *Star Wars*. A huge leap from the fighters before it, many countries adopted it with some having disastrous results. However, it wasn’t formally taken from global service until the Italians begrudgingly retired theirs in 2004. It is still a very serious piece of hardware.

Bouncing back down to slow speed and almost zero altitude is Tom Cleaver’s “Hawk 33: A Day In the Life of a Cobra Pilot.” It was seldom that the Cobras and their Huey brethren were out of range of even an AK-47, so theirs was a mission fraught with the inevitability of getting hit. At the same time, their missions were critical. Often they were the difference between life and death for ground troops in combat with the wounded needing to be extracted.

Our final piece is the history of a Mustang survivor that served its time and is now wearing the colors of PTO pilot, Jacques Young, Jumpin’ Jacques. Although the Mustang is easily the most numerous surviving WW II combat bird, the histories of most of them seldom include actually being in combat. If only these old birds could talk.

We think we’ve cornered some unique pieces of history in this issue and look forward to your comments on them. ✚



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We welcome your comments and suggestions. Letters may be edited for brevity and clarity.



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## Lots'a Gooney Mail

Your April article on the venerable "Gooney" bird honored the memory of my uncle, Lt. Col. Earl Blake. He launched and ended his Air Force career in the C-47. Graduating from flight school in 1944, he was assigned to C-47's in Panama and spent the end of his career probing the night skies over Southeast Asia back in a C-47 configured as a "Spooky" gunship. **Steve Dennis**  
Captain (RET), USAF

Your April edition of *Flight Journal* was exceptional, but your concluding article, "Everyone Has a First Flight: Mine Was In a Gooney" stole the show for me. It brought back fond memories of an Air Force sponsored Explorer Scout Aviation Indoctrination Encampment at Olmsted AFB. The high point was my first flight, this being in a USAF C-47. A thirty plus year career in Naval Aviation ensued, and it all started with that first flight in a "Gooney!" Thanks for reviving the memory. Keep up the good work, as it, and your magazine are much appreciated. **Harry B. Robins Jr.**  
CAPT USN (Ret)

I felt like Budd Davisson did when he first flew on a Gooney Bird. I was probably 14 in the mid-fifties. My next flight on a DC-3 came 20 years later while I was flying in Alaska. This time the DC-3 had turbo props and I was on the left side with drilling pipe on the other side of the aisle. For 17 years, I flew on many unique aircraft, but I always have good memories of the DC-3.

**Gary R. Fuller**  
Carson City, Nevada

As an old R4D pilot, I loved the extremely well-researched and well-written article on the Gooneys by Geoff Jones. Although not too speedy, it was safe and reliable and a good instrument aircraft (except for leaking windows). My squadron had both R4D-5 and R4D-6 versions and I believe the only difference was that the -6 had fuel boost pumps as an addition. *Flight Journal* is a superb magazine. I always eagerly await its arrival in my mailbox.

**Pat Cleary, Docent**  
Udvar-Hazy Center

*Thanks for the Gooney letters, folks. The old bird touched a lot of lives. BD*



## Catastrophe Avoided

Great article on the Japanese preparations for our assault on their Home Islands. Our Poobahs estimated that we would experience one million casualties as a result of that first landing. It would have been much worse than that. A few years ago I read a detailed list of what they had available to throw at us. You mentioned they had a lot of Kamikazi planes ready to go, but you didn't mention the astounding number of those planes they had: FIVE THOUSAND planes, cleverly concealed, plus thousands of suicide boats ready to launch. They had given up on trying to sink capital ships like carriers and BBs, and were going to focus EXCLUSIVELY on the troop transports and even the individual landing craft. It would have been a blood-bath of Biblical proportions.

**Richard Gearon**

*The farther away we get from the proposed invasion, the more we recognize how bad it would have been if Hirohito hadn't surrendered. BD*

## Operation Bingo Insights

Thank you for your article "Operation Bingo" describing the exploits of the 57th Bomb Wing /12th AF in the M.T.O. during World War II. My Uncle served as a Pilot with the 57th BW, completing 60 combat missions. For those *Flight Journal* readers interested to learn more about the 57th and it's individual groups and squadrons, go to: 57thBombwing.com. I recommend it. I have found it invaluable in researching my uncle's service as a pilot. Many squadrons maintained daily diaries which detail their day to day activities, which gives the reader insight as to what it was like to serve in a B-25 medium bomb group. In my research I discovered that my uncle flew a mission with Cpt. Jack Valenti. A few other notables included Deke Slayton, one of the original 7 Mercury astronauts, Joseph Heller, the author of "Catch-22" and several members of the Doolittle Raiders who also served in the 57th.

**Todd Laney, CAVU**

*Your dad knew some interesting people and was involved in history-making times. BD*

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## If the Wrights were WRONG

I thoroughly enjoyed Walter Boyne's article: "If the Wright Brothers Had Been Wrong" (February 2015). I particularly enjoyed the speculative scenario for 1 September, 1939. As a huge fan of alternate history scenarios, I would encourage Mr. Boyne to consider expanding this scenario into a novelette or novel. With his talent, it would make a great read! Yes, imagine Douglas Bader flying a Hawker Fury into combat or Adolph Galland in a Arado Ar.68(!) I would slightly disagree with Mr. Boyne's time-frame, i.e. that the first flight would



have occurred sometime between 1903 and 1913. I speculate that the technologies necessary for true powered flight were available at the turn-of-the-century, and would suggest a practicable powered aircraft flying between 1900 and 1910. However, this is only my opinion, but I would like to hear from other readers on what they think.

Excellent article and magazine! I'll keep reading for years to come! Great job!

**Chuck Davis, Aviation Historian**  
Westminster, Colorado

*We agree that Walt could make this concept into a complete novel. BD*

## Update on XC-99

I wanted to call to your attention to an article in the Feb. 2015 issue of Flight Journal written by Robert F. Dorr on the National Museum of the U.S. Air Force (NMUSAF) relocating the XC-99 to the Aerospace

Maintenance and Regeneration Group (AMARG) at Davis Monthan AFB, Arizona. The article includes some outdated information. The National Museum of the U.S. Air Force's statement on the XC-99 is as follows:

"The staff of the National Museum of the U.S. Air Force (NMUSAF) has determined that our current restoration and exhibit resources and manpower must focus on our critical requirements of preparing for the new fourth building with its four additional galleries, as well as enhancing other displays throughout the museum. These requirements, along with budget and manpower limitations, will not allow for the needed care, attention, and restoration of the XC-99 in the foreseeable future. Therefore, in order to best preserve the aircraft for the long-term, the NMUSAF is in the process of relocating it to the Aerospace Maintenance and Regeneration Group (AMARG) at Davis Monthan AFB, Arizona, which provides optimal storage conditions."

The bottom line is that we don't want your readers to be misled. Restoring the XC-99 requires extensive restoration work, which is just not feasible with the current budget and manpower limitations. The NMUSAF carefully considered other options for the aircraft, but in the end relocating it to AMARG for long-term storage proved to be the best solution at this time.

**Rob Bardua**  
National Museum of the U.S. Air Force  
Public Affairs Division

*Thanks, for the update, Rob. BD*



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## FREEBIE SCREEN SAVER

Our next issue will be a salute to the 75th anniversary of the Battle of Britain, which we think

is not universally recognized as one of the more pivotal events in the 20th century. If England had fallen, the remaining Allies would have had no place to base all of the subsequent military actions. In recognition of that, our screen saver this month is a Messerschmitt Bf 109F-4. Although the "F" model barely made it into the Battle of Britain, we think this image gives a good feel for the airplane. (Photo courtesy of Norman Taylor)



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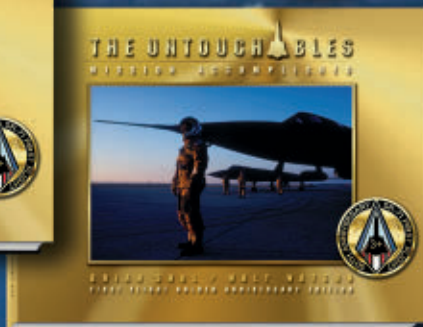
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# F-104

## THE MISSILE WITH A MAN IN IT

BY **BARRETT TILLMAN**

With good reason, aviation enthusiasts have long considered the 1930s "The Golden Age." But when it comes to jets, there has never been a decade like the 1950s, beginning with the Republic's subsonic swept-wing F-84F in 1950, and ending with the Mach 6 X-15 in 1959.

In between was Lockheed's sleekly sensational F-104 Starfighter, "the missile with a man in it."

### **Right Out of Star Wars**

The 104 came off the drafting board of Lockheed's iconic designer, Kelly Johnson of P-38 fame. His team delivered the "point defense interceptor" that the Air Force wanted in the Cold War atmosphere of the Soviet bomber threat.

In a dizzying schedule that would be impossible today, Lockheed delivered the cutting-edge fighter in 24 months. The XF-104's first flight on March 4, 1954, was made in the supremely capable hands of Lockheed's chief test pilot, 41-year-old Tony Levier. He had

logged the inaugural flights in the P-80, T-33, F-94 night fighter, and in 1955, the iconic U-2 reconnaissance aircraft.

With a rocket-like climb rate, the Starfighter was expected to destroy hostile bombers using two AIM-9 Sidewinder missiles and an internal 20mm gun.

The 21-foot wingspan (only 7 feet 7 inches from fuselage to wingtip) afforded just 196 square feet of wing area. Consequently, the awesome rate of climb cost extremely high wing loading: about 100 pounds per square foot versus 70 for an F-100.





The Italian Air Force obviously loved their F-104s. They received some of the first ones in 1962 and were the last to operate them in force, retiring them 2004. (Photo by Katsuhiko Tokunaga/Check-Six)



The General Electric J79 was unavailable when the first XF-104A was ready to fly, so early flight testing was done with the Wright J65 in both prototypes. When the J79 became available 14 months after Levier's first flight, the 104 had a tremendous thrust-weight ratio. Originally rated at 14,350 lbs thrust, the 11 series engines in the F-104G produced 10,000 lbs "dry" and 15,600 lbs in afterburner. Early problems included compressor blade performance and some afterburner failures on takeoff. Flight-tested in 1955, the J79 was installed in other cutting-edge aircraft including the supersonic B-58 Hustler and Douglas F4D Skyray. Later users were McDonnell's F-4 Phantom and North American's RA-5 Vigilante.

Early testing of the "X job" resulted in modifications of the pre-production YF-104, including a longer fuselage and reworked air intakes for the J79. The 13 YFs began flying in early 1956.

In the Steve Canyon air force of the 1950s the 104 was the most glamorous ride going. It was a prestige machine in price as well as performance. The average cost of all 2,500 Starfighters averaged \$1.42 million (twice the cost of an F-100D), or \$11.3 million in 2015 dollars.

But besides airframe and engine changes, the 104 required careful handling. Lockheed anticipated high angle of attack (AOA) problems and installed a "stick shaker" that gave a tactile warning of an impending stall in a nose-high,

transition with the Arizona Air National Guard involved the memorable first flight common to all "Zipper drivers" beginning with startup:

"As the engine continued to accelerate to idle, it seemed the whole machine had come to life. It was not a vibration but more like a tone. A low frequency pulse was felt through the downward ejection seat as the generators came online and radios began to work. After all the checks, taxi to the runway, canopy closed and ejection seat pins removed, we took runway 8 for departure. Engine checks all normal, brake release, then afterburner.

"Acceleration was fantastic! After being accustomed to the acceleration of the heavy F-86L, this was a ride on a rocket! Our departure was to the east and Lt. Col. Phillip Rand (the instructor) had suggested we make an afterburner climb to 35,000 feet. Well, it was a ride to never forget! A clean B model, in afterburner, nose up but still unable to keep the airspeed at 400. Rand said it was OK for the speed to go to 450 for an AB climb. I really tried, and as best as I could but airspeed was only in the vicinity. But it didn't make any difference 'cause all of a sudden, here was 0.9 Mach. I just held onto that as ... all of a sudden here was Flight level 350. It couldn't have been much over two minutes and here we were already!"

Another "Copperhead" was now-retired Master Sergeant Ken Tomb, who learned how to maintain 104s. He recalls, "One thing that got our attention early on was the need to wear covers on our shoes. The wing was solid, with no internal fuel, and we got special

## ACCELERATION WAS FANTASTIC! AFTER BEING ACCUSTOMED TO THE ACCELERATION OF THE HEAVY F-86L, THIS WAS A RIDE ON A ROCKET!

depleted energy flight regime. If a pilot ignored or over-rode the warning, a "pusher" automatically lowered the nose to a safer AOA. Engineers called a stall "departure from controlled flight" but a spin in a 104 was often unrecoverable, hence the wisdom of the stick shaker and "stick pusher."

F-104 pilots were recognizable by their "spur" attachments to the ejection seat, which automatically retracted to keep pilots' feet from flailing.

Entering service in 1958, the Starfighter equipped four squadrons of the 479th Tactical Fighter Wing at George AFB, California, and seven Air Defense Command squadrons, leaving the regular USAF in 1969. It also equipped Air National Guard units in Arizona, South Carolina, Tennessee, and Puerto Rico, the latter until 1975. Many Guard fighter pilots were decidedly unhappy at the change: in 1961-62 Arizona and Tennessee went from 104s to C-97s.

### Flying the Starfighter

A Starfighter pilot with a rare perspective was Major Mike Vivian, who began his career as a National Guard F-51 mechanic. After winging in 1957, he flew air-defense F-86s. His F-104

tools to file the leading edges.

"The early 104s had downward ejection seats, and that didn't work too well. They were supposed to avoid hitting the T tail but in those days you needed something like 150 knots and 1,000 feet, and a lot of pilots were lost as a result. Later a standard vertical seat was used, and I don't think there were any major problems. But one thing about the downward seat; when it was removed, you could stand straight up inside the fuselage to work on the systems!"

In the late 50s Westover AFB employed little people to crawl inside the narrow inlets, preventing foreign-object damage without removing the engine.

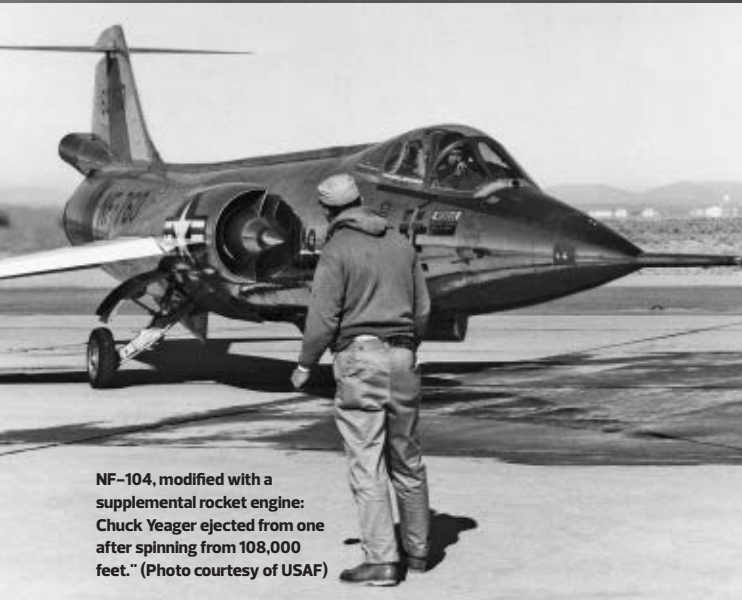
The 104's distinctive sound was the result of fast, hot exhaust interacting with the bypass air around the engine for general cooling at the tail. As Mike Vivian explains, "The result is a whistle but some call it a howl. Actually, it's the J79 installed in the F-104!"

### Record Breaker

The 104 became a record-breaker early on. In May 1958, Major Howard C. Johnson, 83rd FIS, reached 91,243 ft in a zoom climb. A week



Two F-104A Starfighter interceptors of the Air Defense Command's 83rd Fighter-Interceptor Squadron from Hamilton Air Force Base, California, are seen flying over the San Francisco Bay area in 1957. (Photo courtesy of Robert F. Dorr)



NF-104, modified with a supplemental rocket engine: Chuck Yeager ejected from one after spinning from 108,000 feet." (Photo courtesy of USAF)



Above: Vulcan Gatling 20mm gun placement and mechanism in Canadian CF-104. Abbotsford, BC, August 1975. F-104 use of the Vulcan revealed some initial problems that were corrected, and the 20mm Vulcan served a number of U.S. fighters subsequently. (Photo courtesy of Frederick A. Johnsen). Below: Billed as the Free World Defender Lockheed used this TF-104G (N 90500) as a company demo airframe as part of their highly controversial program to sell the Starfighter to Allied nations in the early '60s. (Photo courtesy of Stan Piet)





later his squadronmate Capt. Walt Wayne Irwin claimed the world speed and altitude records in a YF-104A named Speedy. He reached 3,000 meters in 42 seconds; 25,000 meters in 4 minutes 26 seconds, and clocked 1,404 mph over a 15/25 km course, confirmed by the Fédération Aéronautique Internationale. The achievement was rewarded with the Collier Trophy.

Subsequent records piled atop one another including time-to-climb for 3,000 meters (9,800 ft), 6,000 m (20,000 ft), and 9,000 m (30,000 ft). Captain Joe B. Jordan set a world altitude record of

## *CLOSE AIR SUPPORT WAS NOT THE 104'S FORTE' ... A-4 SKYHAWKS DELIVERED SIX TO EIGHT BOMBS FAR MORE CHEAPLY*

103,395 ft in December 1959, unofficially broken by Maj. Robert W. Smith in 1963 with 120,800 feet. The Starfighter also gained an unofficial speed record of Mach 2.5 in 1962.

Japanese, Belgian, and Dutch records included time between cities from 1964 to 1976.

### **Other Voices**

Some U.S. Navy aviators became acquainted with the 104, and their experience offers an unusual perspective. Retired Cdr. Jack Woodul pitted his beloved F-8H Crusader against RCAF CF-104s and recalls:

"They were a gallant foe, but their only effective tactic was to hide in a remote part of the range and send somebody through at a machety-mach, followed by a 'trailer' who hoped to go unseen. Any engagement where they stuck around was easy due to the Crusader's ability to turn and go fast enough to do everything except catch them in an extended in-burner escape. Their zoom-to-the-moon and half-flap around maneuver was easy to counter by following them up and cutting across the arc as they came down. This isn't an I-love-me thing, it's just that the Crusader was a better dogfighter."

Captain Lonny McClung, later a Top Gun skipper, flew the 104 as an exchange pilot at Edwards AFB.

"We flew the jet clean, without tanks, so it was pretty fast. My most memorable event was a zoom flight; full pressure suit. The safety chase plane followed you up and leveled off at 50,000, then picked you up coming back down.

"We climbed to 35,000 and dumped the cabin to make sure the suit was working, turned in and climbed up to approximately 40K. Lit the burner and unloaded to get through the Mach, then accelerated while climbing back to 40-45K—and you could get Mach 2 or slightly greater. Pulled 45 degrees nose up (had data tracking that gave you the pull call because we had to have enough energy to glide to landing on lake bed if engine did not restart).

"Passed 63,000, burner off. Passed 69,000

engine off (to prevent overtemp in thin air), held 45 degrees until we intercepted 4 units on the pitot boom AOA and tracked that over the top. I got to 93,000.

"Restarted engine around 30,000 and set up for simulated flameout landing to the lake bed. Waved off and got to the break on the main runway. I think the whole thing was like 35 minutes."

### **Foreign Accents**

As a NATO aircraft, the F-104 was widely produced abroad. Seventy percent of Starfighters were foreign-built with Italy producing 417 followed by Netherlands (354) and Canadair (340). Thirteen allied nations flew the type, led by Germany which built 283 and operated 917 between 1960 and 1973. Alone among all the Starfighter users, Spain recorded no losses in 17,000 flight hours from 1965 to 1972 when the Phantoms arrived. Japan flew the type for 24 years, losing only three including two in a midair. Italy retired the last operational Starfighters in 2004.

### **Canada**

In 1959 Canada selected the locally built CF-104 to replace its F-86s. The first of 238, including two-seaters, flew in May 1961, entering service the next year primarily as a strike and recon aircraft. In 25 years the RCAF recorded 110 Class A accidents, 37 fatal. Almost one-third of the losses occurred during low-level flight in weather.

Originally eight RCAF squadrons took Starfighters to Europe, that was reduced to three in 1970 when Ottawa dropped the nuclear strike mission using U.S. weapons.

In NATO tactical weapons competitions, Canadians took first or second every year from 1964 to 1968, winning again in 1970. In "Royal Flush" recon meets the Canadians won the day category three years running from 1968.

Maple Leaf Starfighters saw more use than any others, averaging 6,000 hours when retired compared to 2,000 for the Luftwaffe.

CF-104s also flew with Denmark, Norway, and Turkey, being retired from Turkey in 1994.

The last Italian Starfighter flight was memorable: In March 2004 Teniente Piercarlo Ciacchi remained airborne 2 ½ hours without tanking, a remarkable achievement for the notoriously short-legged F-104.

### **Germany**

The regenerated Luftwaffe was a major NATO player and joined the F-104 family in 1960. It was a controversial decision: apart from building the advanced interceptor, 11 operational units flew the type including two naval. The world's leading fighter ace, Colonel Erich Hartmann, commanded an F-86 wing in the late 1950s to early '60s and



German Control Configured Vehicle F-104 test aircraft. Quadruplex redundant digital flight control system, including the unorthodox second horizontal stabilizer, enabled testers to program it with negative pitch stability as a research vehicle. (Photo courtesy of Peter Weger collection via F. Johnsen)

expressed concern about the leap from Sabres to Starfighters in so young an air force. But leading from the front, in the mid '60s senior Bundesluftwaffe generals Johannes Steinhoff and Gunther Rall qualified in the 104 with "The Kaktus Starfighter Staffel" at Luke Air Force Base, Arizona. They grounded the type to modify the training syllabus with technical changes including the Martin-Baker ejection seat.

Germany lost some 282 Starfighters with 115 fatalities, including 37 crashes in Arizona though some Luftwaffe aircraft were American-flown. From 1968 to 1973 Germany lost more than one a month, finally totaling about 30% of its 104s. However, that was less than the swept-wing F-84F—and less than some other users. Luftwaffe Geschwadern flew a range of missions, including overland and maritime strike, air defense, nuclear delivery, and reconnaissance.

Luftwaffe pilots gained a reputation for aggressive flying. NATO helicopter pilots reported 104s flying beneath them—including a naval pilot about to land on his ship.

The last Luftwaffe operational Starfighters were retired in 1987, with systems aircraft remaining until 1991.

## Combat

The Starfighter was new in service when the Taiwan Strait crisis broke in 1958. American support included the 83rd FIS, which took its 104As to Taiwan in September and ferried in C-124s. Once assembled and tested, the squadron's jets were placed on five- and 15-minute alerts. The 83rd was relieved by the 337th FIS late that year. No



Given the aircraft's incredible performance, which is on a par with modern aircraft, its analog/steam gauge instrumentation seems out of place. (Photo courtesy of USAF)





A NASA F-104 in flight over the desert during 1990. The aircraft has an experiment fixture under the fuselage, and a rack under each wing. The right wing rack (on the left as seen in the photo) has an experiment attached. (NASA via Frederick A. Johnsen)

#### PRODUCTION SUMMARY

<b>Lockheed:</b>	737
<b>Canadair:</b>	340
<b>Germany:</b>	283
<b>Netherlands:</b>	354
<b>Belgium:</b>	198
<b>Italy:</b>	417
<b>Japan:</b>	207
<b>Total:</b>	2,536

#### FOREIGN STARFIGHTER USERS

<b>Belgium:</b>	four squadrons retired 1986.
<b>Canada:</b>	nine squadrons used 238, 1962-1986.
<b>China:</b>	eight squadrons used 282, retired 1997.
<b>Denmark:</b>	two squadrons used 51 from 1964, retired 1986.
<b>Germany:</b>	11 squadrons (two naval) received 916 1960-73, retired 1987.
<b>Greece:</b>	two squadrons received 51 plus replacements, 1964-1994.
<b>Italy:</b>	13 squadrons received 149 from 1962-3. Total 360 from all sources. Retired 2004. Aeritalia built 205 F-104s, first flew 1962.
<b>Japan:</b>	seven squadrons flew 230 aircraft 1962-1986.
<b>Jordan:</b>	two squadrons flew 32 Starfighters 1967-83. Replaced by F-5s and F1s.
<b>Netherlands:</b>	five squadrons flew 138, all but one European built.
<b>Norway:</b>	two squadrons flew 44 U.S./Canadian F-104s 1974-1982.
<b>Pakistan:</b>	one squadron flew 14 aircraft 1961-1972.
<b>Spain:</b>	one squadron flew 21 aircraft 1965-1972. No losses.
<b>Turkey:</b>	10 squadrons flew 369-400 aircraft (various sources, not all flown) 1963-1995.

and F-100s, he volunteered for combat and flew 75 missions in F-104Cs.

While escorting an EC-121 over the Tonkin Gulf, Smith fell victim to “incorrect navigational commands” and equipment failures that put him well over the Chinese island of Hainan. The Chinese scrambled naval interceptors that intercepted him well inland. The Shenyang J-6 (MiG-19) that bagged him was radar vectored in cloud and hidden from view. After a 30mm shell severed one wingtip, Smith cleared a compressor stall and maneuvered to fire his remaining Sidewinder at the MiG. An instant after firing he sustained a hydraulic failure. With no option, he ejected with no chance of escape and spent more than seven years in captivity. He retired as a colonel in 1996.

#### Pakistan 1965 and 1971

The Starfighter's bête noir was the MiG-21, the Soviet contemporary first flown a year after the XF-104. Pundits speculated on the outcome of a significant clash between supersonic fighters, which finally occurred in 1965.

When India and Pakistan went to war that April, MiGs and Starfighters were available only in limited numbers.

From June through September the PAF Lockheeds saw combat on at least six occasions while logging nearly 250 hours total combat time. Their claims included two Canberras, two Mysteres, and an Ouragan forced down. In turn the Indian Mystere IVs downed an F-104.

At the start of the 1971 conflict the PAF was phasing out Starfighters, which only logged 104 hours with No. 9 Squadron. Air combat was limited to five days in December, destroying two victories on the 4th, followed by a Canberra and a Breguet Alize a few days later.

However, the situation turned abruptly with nine IAF MiG-21 squadrons then active. Reinforced with “loaners” from Jordan, the Pakistanis continued aggressively flying 104s. They lost a plane and pilot to MiGs on the 17th with two other Starfighters damaged in air combat at war's end.

Five F-104s remained after the cease-fire, lacking spares due to the U.S. embargo. Pakistan retired its Lockheeds in 1972, having averaged about 1,000 hours annually.

#### Taiwan 1967

Nine years after the initial USAF Starfighters deployed to Taiwan, the Nationalist Chinese put their F-104s to use. On January 13, 1967, a flight of F-104Gs tied into eight Communist J-6s (MiG-19s). Major Shih-Lin Hu and Captain Bei-puo Shih of the Third Fighter Squadron fired Sidewinders and were credited with victories, but a 104 and pilot were lost. Back in Burbank, Kelly Johnson studied the engagement and concluded that the

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JF-104A (formerly YF-104A, serial # 55-2961) was modified with a hydrogen peroxide reaction control system (RCS). Following a zoom climb to altitudes in the vicinity of 80,000 feet, the RCS system gave the aircraft controllability in the thin upper atmosphere where conventional control surfaces are ineffective. (NASA via Frederick A. Johnsen)



### VERIFIED F-104 AIR TO AIR CLAIMS

COUNTRY	YEAR(S)	SCORE	ENEMY
USA	1965	0-1	v. Communist China
Pakistan	1965, 71	4-5	v. India (+5 unverified)
Nat China	1967	2-1	v. Communist China
Jordan	1972	1-0	(blue v blue)
Total		7-7	

Compiled from ACIG.org databases.

Starfighter required more wing area and began work on the abortive Lancer variant.

### Jordan

The Middle East is no stranger to internecine warfare, as the Royal Jordanian Air Force

learned. In November 1972 a coup engineered by Islamist extremists involved an attempt to kill King Hussein—by an F-104 pilot. The conspirator recruited by the plotters attacked Hussein's helicopter just before takeoff. However, the American-trained major missed his mark in the initial firing pass and was promptly killed by another RJAF Starfighter.

### Mediterranean Musings

During June 1980 several NATO aircraft engaged a Libyan MiG-23 in one of the most convoluted aerial episodes ever. An alleged attempt to assassinate Libyan strongman Moamar Khadafi turned to hash when an Italian DC-9 was taken for his Tupelov airliner. Khadafi diverted to Malta while apparently the lone MiG escort, mistakenly joining the DC-9, stumbled across three Italian F-104s, two French Mirages, and three U.S. Navy A-7s. Whatever happened, the MiG crashed fatally in Italy, and some accounts credit a Starfighter with the shootdown.

In recurring disputes over Cypress, Turkish F-104s and Greek Phantoms tangled from 1983 to 1986, with the F-4s claiming "close calls" and one or two maneuver victories against the Starfighters.

### Post retirement

NASA obtained 11 Starfighters for research and supporting flight test programs from 1956 to 1994.

Darryl Greenamyer built his own Starfighter from parts, capping a 12-year effort with an assault on the low-level world speed record in October 1977, as he had won the piston speed record in his F8F-2 Bearcat in 1969, logging 483 mph.

Enthused about the F-104, his J78-17/1 produced more than 2,000 pounds of thrust over the usual "dash 19" engine. Flying near Tonopah, Nevada, in October 1977 he set an international class record of 988 mph in a 20-minute flight, almost entirely below 100 feet. Four months later he ejected from the Starfighter while preparing for a world altitude record.

The FAA lists 12 F-104s on the civil registry including eight with RLB in Tarpon Springs, Florida. Starfighters Aerospace boss Rick Svetkoff organized the firm in 1995, when the type remained operational in some air forces. The only F-104 rated instructor pilot, he says, "Starfighters Aerospace has flown over 300 air shows, and over 3,000 sorties in the past 20 years. We are currently developing an air launch system, at Kennedy Space Center, to deploy nano sats into low earth orbit."

Mark Sherman of Fuel Fresh in Phoenix, Arizona, has owned a former Norwegian CF-104D since 1996. A typical flight includes a 20-minute cruise at 18,000 ft to the North Rim of the Grand Canyon, with a lower-level flight back to Williams Gateway Airport for a few touch and go's.

By sight, sound, or an E-ticket ride, the Starfighter remains one of aviation's multi-faceted experiences. ✚

*Thanks to Piercarlo Ciacchi, Lonny McClung, Hubert Peitzmeier, Mark Sherman, Rick Svetkoff, Ken Tomb, Mike Vivian, and Jack Woodul.*

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# MOSQUITO!

## Black Ops in the Wooden Wonder

BY LT. MARVIN R. EDWARDS (USAAF) RET. AS TOLD TO AND WRITTEN BY JAMES P. BUSH

*There's an erroneous assumption that bombers did nothing during WW II but drop as many bombs as possible on as many critical targets as possible. However, a small group of bomber crews, the "carpetbaggers," never dropped a single bomb, but had an effect that was out of proportion to their small numbers. Lt. Marvin Edwards was one of those, and this is his story.*



Mosquito KA114 on its first post-restoration flight in New Zealand where the aircraft was restored. Glynn Powell and his team produced the wooden wing and fuselage, and Avspecs took on the challenge of fitting it out. The project took a total of 7.5 years. One of two flyable Mosquitos in the world, it is based at Jerry Yagen's Military Aviation Museum in Virginia Beach, VA. The photo pilot is Keith Skilling. (Photo by Gavin Conroy)

## Fork in the Road

I joined the Army Air Force in April of 1943 and started flying in Piper Cubs. My dream was to be a fighter pilot and I looked forward to slugging it out with the enemy for the war effort. But those dreams were all shattered while in primary flight training when the instructor threw our trainer into a spin and I soon developed vertigo. It was felt that I would do better with a larger multi-engine plane, because it involved less chance of tight maneuvering that would be found while flying a fighter.

I ended up training as a navigator and eventually found my way into a B-24 Liberator crew. As we became acquainted with one another we trained hard to be the best we could be and

worked as a team. Some of us cross-trained positions, and it felt good to fire those .50 caliber machine guns once in a while!

The B-24 was fine airplane, but my main complaint was that the navigator's table was situated right over the nose wheel well with no real shielding from the elements. The temperature outside was the same inside—extremely cold! When flying in cold weather we had to wear a heated suit and heavy gloves, which I had to remove to work my instruments which always froze up—frostbite was common.

With our training complete we made our way to England to become part of the Eighth Air Force—or at least that's what I was told before we left.



## Dark Shadows and Carpetbaggers

When I arrived in England, I was assigned to the 492nd Bomb Group at Harrington, near Kettering in Northamptonshire. Our base, however, was not your typical bomber facility. The purpose of the base was to support the Office of Strategic Services (OSS) which was the forerunner of the CIA. When I first arrived and saw that all the airplanes on the base including B-24s, A-26 Invaders, C-47 Dakotas, and the twin engine deHavilland Mosquitos were all painted black, I quickly learned my life would be much different. I was told that I was part of an intelligence organization working on top secret missions, not only in Europe, but in the Pacific as well. We were informed we would be assisting the underground forces with supplies and personal in our B-24s and flying the other airplanes on "special missions."

The major operation of the Eighth Air Force was daylight bombing of targets in Germany and occupied Europe. The British Royal Air Force (RAF) carried out similar missions, but did so at night. The 492nd only flew at night. We were affectionately called the "Carpetbaggers" because we always intruded into an area we were not wanted.

When our aircraft took off for a mission, either individually or in a group, we often found ourselves surrounded by RAF Lancaster bombers headed for Germany. Our B-24 served mainly two purposes; it could be used for a bombing mission as one of the diversionary forces for the RAF or as a single plane dropping spies or supplies to aid resistance forces operating behind German lines. As a bomber, we normally flew with 10-15 other B-24s, and we dropped aluminum foil as well to jam German radar.

We used two of our own radar systems; one was the Gee system developed by the British. It was perfect over England, and I could pinpoint within a few hundred yards where we were, but the farther away you got, like over Germany we switched over to our other radar called LORAN-long range navigation.

On my first diversionary bombing mission our target was Emden, located on the North German coast. To avoid the flak we flew over the North Sea, and then turned south towards our objective. As we neared the target area, the B-24 suddenly appeared to be lit up by light flashes so bright that one could read a newspaper! I told the pilot that the Germans must have had very

The sound of a pair of Merlins winding up is unique to the Mosquito. As can be seen, the pilot has good visibility over the nose on takeoff and landing. (Photo by Richard Allnut)



A Carpetbagger Mosquito crew prepares for a Red Sticking mission.



powerful flood lights aimed in our direction. Just then our bomber began to get tossed around in "the light." The pilot quickly responded, "Those aren't spotlights Edwards, that's the flash from anti-aircraft fire!" That was my baptism of fire as we unloaded our bombs and got out of there as quickly as we could. A few other B-24s in our flight weren't so lucky.

Thankfully, some of my missions entailed carrying some "special cargo." On one mission we were briefed that we would be dropping a "Joe," the code name for a spy, over German occupied France. The place and time for the rendezvous were often established by the British Broadcasting System (BBC) in a coded message. The messages contained phrases like, "Tell Marie to wear her goulashes," or "Uncle Jean has two shillings in his pocket," and many others that would alert the French underground that a plane would be over a certain landing field that night to drop arms, supplies or saboteurs.

So as a young man, fighting in a foreign land and being very homesick, I was delighted when our "Joe" turned out to be a stunning and beautiful French girl who spoke perfect English. She joked with us before the B-24 reached the drop zone and for a few minutes our lives were "normal" again. With parachute attached, we wished her luck and she smiled as she vanished through the "Joe Hole" into the black sky. We both knew that if the Germans captured her, she'd be shot.

## Mosquito Memories

In late 1944, I was selected to learn the navigation and radar systems on the Mosquito. I found the systems were a little different than what I was

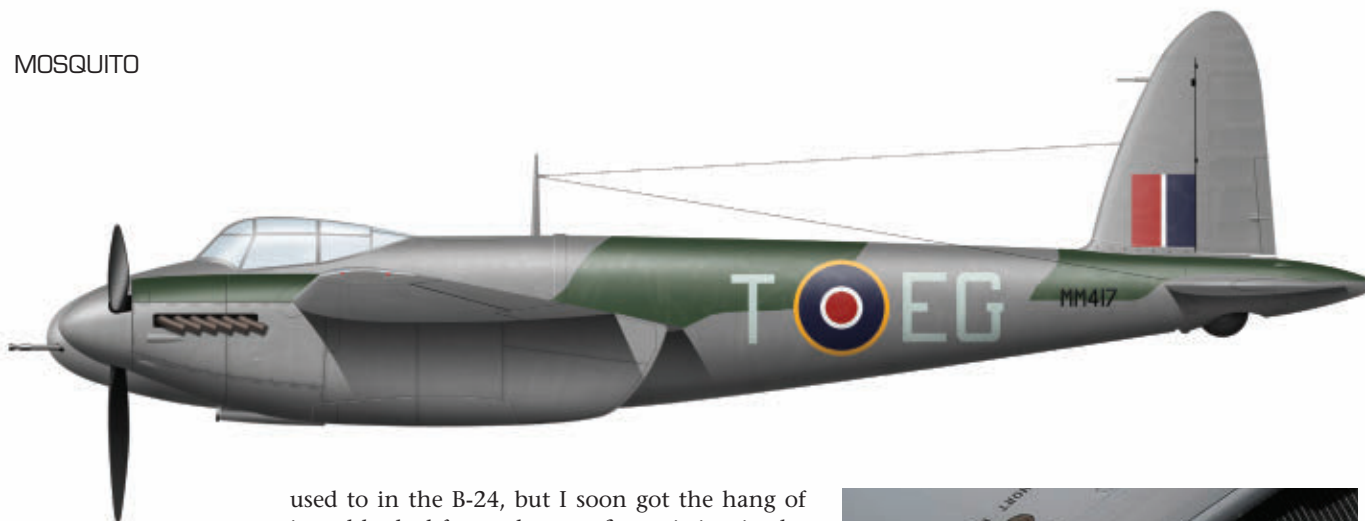


Navigator Marvin Edwards peers out the Plexiglas nose of a Carpetbagger bomber during a mission.



Marvin Edwards and the rest of crew 292 at Walla Walla Washington during their B-24 check out.





**Above:** The Mosquito wore both UK roundels and U.S. stars and bars during WW II and was one of the most valued high-altitude recon aircraft. (Illustration by Tom Tullis)

**Below:** Mosquito KA114s cockpit is as accurate as it can possibly be for the model and type. Being an fighter model, it gets a joy stick rather than the control column that the bomber versions had fitted. The space lower right was a crawl-way for the bomb toggler in the bombers. (Photo by Gavin Conroy)

used to in the B-24, but I soon got the hang of it and looked forward to my first mission in the Mosquito for many reasons. Although I knew we would be flying as a single aircraft, and the crew only consisted of a pilot, navigator, and radio operator shoe horned into the belly, the heat pumping into the cabin from those beautiful twin engine Rolls-Royce Merlin engines was more than comfortable, even at 40,000 feet. Instead of sitting in the back, I sat up front right next to the pilot. The escape hatch was practically under my feet and on one fateful mission it turned deadly for one of my comrades.

I had been called up to take a mission as replacement because the navigator who had been



Cleverly concealed in the center-section leading edges, the radiators for the Merlins contribute very little drag to the airframe. (Photo by Eric Dumigan)



The bomber versions offered the bombardier a prone flight position during the bombing run. It is seldom we see such sharp photos from the period. (Photo courtesy of John Dibbs Archive)



scheduled reported he was sick. As we were being briefed for the flight, the sick navigator suddenly appeared and said he was well enough to go. Unfortunately, he did something I never did; he jumped into the Mosquito without attaching his parachute harness. I learned later on that during that mission, the Mosquito had developed engine problems and the crew had to bail out. There was no way the pilot could get out unless the navigator went first. To save the pilot's life, the navigator jumped and fell out of his chute to his death.

The Mosquito in my mind, and especially for our purposes, was the best airplane developed during the war. It was better than anything we had, and I am thankful that when the RAF laughed at De Havilland's wooden plane design, he decided to build it with his own money to prove them wrong. The British of course fell in love with the Mosquito utilizing it as a night fighter, bomber, and weather plane among many others. The Germans of course were fit to be tied with "the Wooden Wonder." The Luftwaffe commander, Herman Goering, is often quoted as saying that, "I turn green and yellow with envy when I see a Mosquito flying overhead. The British knocked together a beautiful wooden aircraft that every piano factory over there is building!"

The Mosquito had tremendous speed, especially for an airplane that was manufactured primarily out of wood. Plus, our OSS Mosquitos were probably faster than our RAF counterparts due to the fact that we had them stripped down. We carried no guns, no under wing fuel tanks and no



IFF equipment to identify us as "friend or foe" or any other non-essential equipment. We operated well above anti-aircraft fire and my only concern late in the war was being shot down by a stray Me 262 jet; thankfully I never saw any.

Because the Mosquito was made mostly of wood, the German radars had difficulty tracking us from the ground. Operating high over Germany, we carried enough fuel to complete the mission—but not much more extra for us to orbit over the Joe for less than one hour. During one of those missions late in the war I learned just how important our job truly was.

### Red Stocking

In late April of 1945 we were flying toward Germany, past the flickering lights of the front lines

Home away from home—living conditions for the 492nd Bomb Group at Harrington.





Being entirely made of wood, the Mosquito was largely invisible to German radar until in close range, which worked to its advantage in the role as an aerial spy. The wood structure, however, guaranteed that postwar survival of the type would be short unless stored indoors, which usually wasn't the case. (Photo by Gavin Conroy)

into the black of night. The mission was classified as "highly secret" and we carried the code name "Red Stocking." Our objective was to make contact with an OSS "Joe" who had parachuted deep into Germany, near Munich. As I sat up front with the pilot enjoying the room temperature conditions, I felt bad for the OSS agent lying in the unheated belly of the Mosquito just behind us, barely staying warm in his electric flying suit. I knew how bitterly cold it was having survived my B-24 days. The job of the OSS man was to converse with the Joe on the ground using a newly developed radio system that could not be picked up by the Germans. It was a major scientific breakthrough called the "Joan and Eleanor" system. The equipment was battery operated, and the transmission and receiving package carried on the Mosquito weighed 40 pounds.

The transmitter and receiver were called "Eleanor" and the OSS agent on the ground carried a six and a half inch by one and a half inch transmitter called "Joan." It could pick up a voice on the ground as we flew in a 60-mile circle at 40,000 feet. The cone narrowed to just a couple of feet at ground level. The chance of the conversation being picked up by German direction finders was almost nil. The conversation that took place between the Joe and the OSS agent was recorded in the belly on a wire spool.

This mission was critical because there were reports after the Battle of the Bulge that if the Germany Army surrendered to the Allies, the fanatical SS would hole up in the Bavarian Alps, build underground fortifications and factories connected by tunnels. Utilizing the natural defense of the

mountains, they would make their last stand and continue the fight. Our job was to find if the rumors were true, and if they were we knew the war would drag on for months at the very least.

We established contact with the Joe on the ground as we fought 100mph winds that tried to blow our Mosquito off course. As a navigator it was my job to constantly give course corrections to the pilot so the OSS agent and Joe maintained constant communication. We fought the winds for over a half an hour and were finally given the signal to head back to England. After landing the recordings were turned over to OSS headquarters in London. I learned later that the German forces in Bavaria had no desire to continue the fight. Less than a month after our mission, Nazi Germany surrendered.

We lost many friends in the 492nd Bomb Group. Some were shot down while others were flying too low for a drop to one of the resistance forces and crashed into mountainsides. Some of those on Mosquito missions failed to return, so it was a time of courage and sacrifice for all members of the armed forces serving in combat. The Red Stocking missions, using the "Joan and Eleanor" equipment, were only a small part of the overall OSS operations in Europe, but without it, much of the information obtained by agents in Occupied Europe would have been wasted. The Joes on the ground (both men and women) were the real heroes. Their lives were at risk every day. And although a number of them were caught and were either shot or sent to a concentration camp, they played an important role in saving many lives in our armed forces. ✚

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ONE OF A KIND

# The Waterman “Whatsit?”

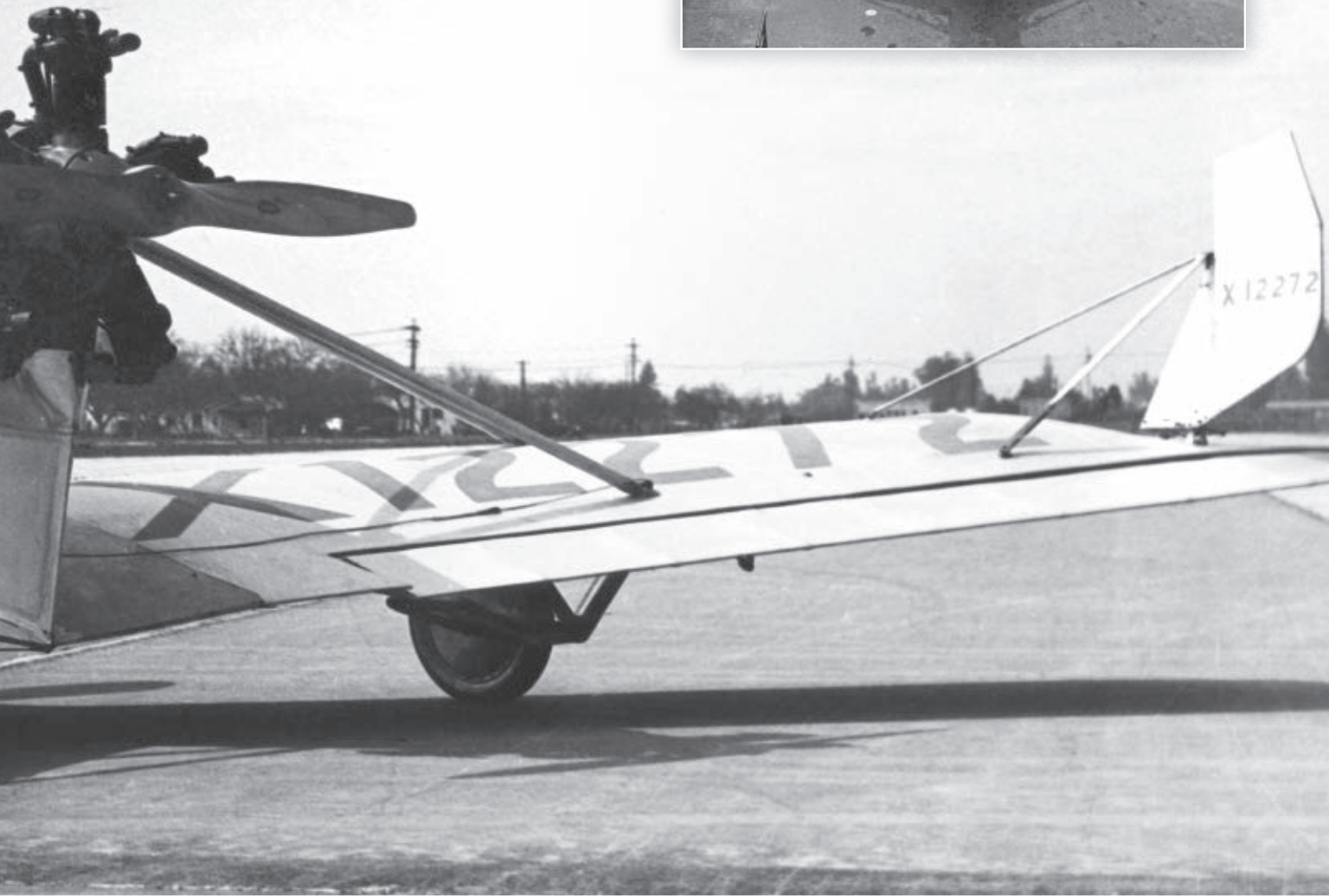
BY JOE GERTLER



It only takes a brief glance at the Waterman “Whatsit” to make it instantly obvious that Waldo Waterman was a visionary innovator in the history of aviation. Born in San Diego in 1884, Waterman’s boyhood was in an era when very few people had seen or heard of an automobile, and aeroplanes were still a fantasy concept. But at age 15, he had already caught the “flying bug,” designing and building his own glider and experimenting with building airplanes. He was fortunate to become acquainted with Glenn Curtiss, who hired and encouraged him. Never a man to accept any aircraft design as perfected, he spent most of his life improving them, or designing and building his own versions from scratch. Having first flown in 1909, he was a respected and honored member of The Early Birds, and even served a stint as its President.

Waterman’s long association with Curtiss was one of two influences that spurred him on to his unique flying wing. Curtiss had reached one of his many design milestones with the development of the famous pre-WWI Triad. It had been named because of its ability to be used in the air, on land, and on water. Reaching that aviation design plateau, Curtiss remarked in 1911: “If we could only drive this thing down the street, like an automobile, we would really have something.” That idea remained embedded in Waterman’s mind for years to come and was instrumental in his concept of an affordable, simple flying machine that could also be driven like an automobile with the wings removed. It would use a power source that could switch to drive the wheels and would need to have its steering system sorted out for both flying and driving. The initial version

This front view shows the unusual tailless pusher with 15 degree wing sweepback. It was the first aircraft with elevon control. The booms of the front elevator were adjusted by sliding them through two small common shop vises. The nose wheel was steerable.



was powered by the 100 hp Kinner K-5. While doing the pre-flight procedure at the airport, the amazed spectators constantly asked "Whatsit(?)" and the nickname follows it to this day. It survives at the Smithsonian's National Air and Space Museum.

The other major influence, born at a time that was the worst of all years for the Great Depression, came from Eugene Vidal, appointed in 1933 as the Director of the newly reorganized Aeronautics Branch of the Dept. of Commerce. He had the Public Works administration fund a \$500,000 project to make airplanes more affordable and provide many jobs.

The initial development of the 1932 Whatsit was the start of the project inspired by Curtiss. Having experienced numerous crashes and setbacks, and never reaching the automobile stage with this

initial design, he found further encouragement from the opportunities that Vidal offered for the design of a "Model T Of The Air." All parties hoped that such an affordable plane would help to restore the promise of the aviation industry, and the economy along with it.

Eventually, Waterman did work out the kinks and got the Whatsit to fly in a reasonably stable manner. Along the way, he considered that the thrust relationship between the high, rear mounted engine and prop were not completely compatible with the low wing. He continued making major revisions in the design, with the evolution to the subsequent high-wing versions, the Arrowplane and the Arrowbile. As the designs matured, he was then able to pursue the modifications toward roadability features. His 1936 Arrowbile Flying Automobile was claimed to be capable of 70mph on the road. ✈





MY TARGET IS

# WHAT?!

Embarrassing Non-shootdowns

BY R.R. 'BOOM' POWELL



N

ot all of fighter aviation is aimed at protecting the fair damsel from the marauding Count von Evil. In fact, history shows that fighter jocks themselves have often provided whimsical, if not

overly efficient episodes that have left their mark in the annals of fighterdom.

"Ever shoot down a balloon?"

Sam Flynn was in an expansive mood after winning several rounds of "Horse." (Ed: a dice game popular in officers' clubs. If you are not experienced do not play—especially with fighter pilots—unless you are prepared to buy many rounds of drinks.) He recalled:

"Back in my first squadron we tried to once. We had moved our F8U Crusaders to NAS Key West, and when we weren't standing alert in case the wily, commie Cubans decided to attack, we flew training missions over the Gulf.

"During the morning brief for the alert pilots, the squadron duty officer stuck his nose in the ready room and said that 'Fat Albert,' the moored balloon with radar that watched the Florida Strait for those invading Cubans, had broken its tether and was floating away. We were ordered to shoot it down.

"The CO lit up. 'Men, we have a real live target for a change. Let's go get 'em.'

"The first delay came when someone said, 'Ya know those Sidewinders we've got sure aren't going to do anything against a helium filled balloon,' and the order was given to drop the heat-seeking missiles from the airplanes.

"We launched in pairs. Nothing quite like tight wing on a 'Sader in full afterburner. Anyway, by the time we got airborne, that balloon had floated way east and far faster than we expected. And it was high ... very high. 'Course we stayed in burner the whole time.

**Early Chance Vought F8U-1 Crusader at the Naval Missile Center circa 1961. A Sidewinder was carried on each side of the fuselage and gunports for the 20mm cannon are below the cockpit. The belly speed brake has bled down. [Tailhook]**



**An example of a surveillance aerostat moored at its base. While the electronics and avionics may have changed over the years, the uplifting balloon is much the same as the one which "escaped" from the Florida Keys.**





F6F-5K target drone at Point Mugu with mechanics performing an engine check. Drones were given bright paint schemes for visibility. [Nat Archives/Tailhook]

**If the 5K with over 100 gallons of hi-octane aviation gasoline in her tanks crashed in a populated area, it would be a disaster.**

"By the time we had a tally, Fat Albert was above fifty thou. We weren't wearing pressure suits, but the skipper wanted the kill bad. He leveled off and we accelerated past Mach. He radioed, 'Follow me. We'll pitch up and when the balloon is in your sights give it a long burst. Maybe one of the slugs will hit.'

"Our climb was almost vertical. As ass-end Charlie I could see smoke from the CO's cannon, followed by No. 2 and 3 before I squeezed my

balloon. Popped up high and fell into the Atlantic? Heck, might still be lying in the Sahara."

## The Saga of 5K

The F6F-5K drone took off from Naval Air Station Point Mugu, California, at 1134 Pacific Time on August 16, 1956. The flight was normal at first, but then the drone turned back toward the coast instead of proceeding to the Pacific Missile Range. The controller's telemetry signals had no effect. It was almost as if the F6F-5K had a mind of her own.

The sailors who worked on the unpowered aircraft called them "F6 drones" or simply, "5 Kays." The line on the ramp where the target drones were parked was mockingly referred to as "Death Row."

Grumman built 12,200 F6F Hellcat fighters. This 5K's sisters had shot down over 5,200 enemy aircraft for a 19-1 kill-loss ratio. Now the tired airplanes were targets for testing the Navy's latest missiles.

Painted bright red with yellow camera pods on the wingtips, 5K kept climbing as she headed toward Los Angeles and Hollywood. The men on the ground had a problem; if 5K with over 100 gallons of hi-octane aviation gasoline in her tanks crashed in a populated area it would be a disaster. The Air Defense Command had armed fighter-interceptors on alert at nearby Oxnard Air

trigger. Next thing I knew, the first F-8 slid back and pitched over. Then two. Then three. The engines had flamed out. I'm staring at three huge Crusaders falling at me!

"That's when my engine banged and quit.

"Didn't know which to do first; try for a right or recover from the tumble. Suppose I did both. I remember seeing the altimeter spinning past sixty some thousand. I didn't even think about the other guys until later. It was a miracle we didn't collide.

"That's kind of the end of it. Engines restarted OK. Came into the break at Key West in formation. Never did find out what happened to the

Force Base. Call them and have the Air Force shoot down the uncontrollable drone.

The Northrop F-89 Scorpion is well-named—the tail reaches up and back like the tail of the venomous arthropod. However, the sting of the Scorpion airplane was not in its tail but in the huge pods on the end of its wide, straight wings. Current Air Force thinking was that guns were obsolete; the way to destroy the hordes of incoming Russki bombers was rockets. Unguided, but there were lots of them. The F-89 carried 52 folding-fin, 2.75 inch, unguided “Mighty Mouse” rockets in each

pod. In each of the two Scorpions of the 437th Fighter Interceptor Squadron scrambled from Oxnard was a pilot and radar operator. All four officers were first lieutenants. For them it was a thrill to be sent after a real, live target.

5K had swung northeast, reached 30,000 feet and began a lazy circle near Santa Paula. The Scorpions tried to fire using the Hughes built fire-control system...and nothing happened. There



was a design fault in the system that would not fire the rockets while in a turn.

5K pointed toward Los Angeles again. Desperate, the F-89 crews decided to fire visually rather than try the unreliable fire-control system again, but there was a problem; the gunsight had been removed because, “the new fire-control system would take care of aiming.” Each Scorpion fired

**Early model F-89 Scorpion; the two Allison J-35 engines produced 5,440 pounds of thrust each with the afterburners adding another 1,800 pounds—at the cost of high fuel consumption. The F-89 weighed over 37,000 pounds.**

**The errant rockets did start brush fires near Castaic and Newhall and ignited several oil well sumps of the Indian Oil Company.**



**The F-89's primary armament was 104 unguided 'Mighty Mouse' 2.75-inch aerial rockets.**





A late model "Long Nose" F-11A Tiger in US Navy advanced training squadron VT-23 with two squadron mates in the contrails. The cannon ports are low on the jet intake. [Tailhook]

a salvo of 42 rockets. They all missed 5K. The errant rockets did start brush fires near Castaic and Newhall and ignited several oil well sumps of the Indian Oil Company.

For the Air Force crewmen the frustration level was rising fast. On their final runs they fired all the rockets they had left. Not only did they also miss the drone, but they fell into the city of Palmdale.

Imagine the shock to the teenager driving with his mother when a rocket exploded in front of their car, blew out a tire, and put holes in the windshield, hood and radiator. A woman sitting in her home with her six-year-old son had a chunk of shrapnel go through a window, ricochet off the ceiling and lodge in her cupboard. And more fires were started. About 500 firefighters

5K had sliced through power lines along a highway. The splices were still there.

Looking back, one has to wonder how effective the Air Defense Command with its F-89s, F-86 "Dogs" and F-94s—all firing unguided rockets—would have been against attacking Soviet bombers? And, perhaps predating current concerns by 60 years, was the county supervisor who worried about "the Navy sending them robot-like planes up."

### Tiger versus Tiger

The sleek Grumman F11F-1 (designated the F-11A in 1962) Tiger's career as a first line fighter lasted only four years; primarily due to its short "legs." However, it was used for advanced training, as well as by the Blue Angels until well into the '60s. At the Naval Air Station Kingsville, Texas, fighter pilots who were now instructors were bored because they didn't have a shooting war.

One fine day, a student on one of his first flights in the Tiger had a malfunction in the pitch system that gave either full up or full down elevator when the landing gear was lowered. After a couple of attempts at troubleshooting, and much advice over the radio, it became obvious that a landing was impossible and a controlled ejection was in order. The student was carefully briefed to head for the Gulf of Mexico and when over the coast, put the throttle at idle and pulled the face curtain. Well, the stud got most of it right. In the panic of the moment, he "sort of" left the throttle

**A student on one of his first flights in the Tiger had a malfunction in the pitch system that gave either full up or full down elevator when the landing gear was lowered.**

needed two days to put them all out.

The Air Force sent in an ordnance disposal team to deal with the damage of 208 2.75 inch explosive rockets. They discovered 13 duds at Palmdale. That was a good thing considering where they hit.

5K? She continued her leisurely flight east until she finally ran out of gas. In 1997 a team specializing in locating wrecks found 5K in the Mojave Desert primarily from electric company records.

at a cruise power. In the meantime, his squadron commanding officer had prematurely called the admiral, Chief of Navy Advanced Training at the Naval Air Station Corpus Christi—on the edge of that city—to report that the emergency was over and everything was OK.

The same CO had to call back less than 10 minutes later to report that not only hadn't the wayward Tiger crashed in the Gulf, but if the admiral wished he could look out his window and watch the F-11 circling over the city.

Enter our "hero," a Marine captain instructor just airborne leading an air-to-air gunnery mission. He is sent on the ideal fighter mission—to shoot down a defenseless, non-maneuvering target. Not as easy an assignment as it sounds. While the Tiger was not maneuvering, it was flying in a circle. And he could only fire his cannon when both he and the other F-11 were heading toward the Gulf and the city of Corpus Christi was not in the way. After four firing runs the errant Tiger was still happily droning along and the Marine's frustration level rising fast. On his fifth try, the target Tiger gave off a puff of smoke and started to descend just as the shooter ran out of ammo and had to head home with low fuel. The captain had a shoot down and mentally had a kill marking painted on his jet even before he taxied in. To one and all he boasted of his prowess and airmanship.

The squadron safety officer and his investigative team had been

out in the prairie on the King Ranch checking the crash for a couple of hours when Captain "Ace" arrived to gloat over his kill. With a small smile, the safety officer greeted him and asked him to count the bullet holes in the bellied-in Tiger.

There were none.

The straying F11F had run out of its limited fuel supply and made a gentle glide to a smooth landing. The Marine captain was a lot quieter for the remainder of his time in the squadron.

Stories like the above abound in USAF, USN and USMC fighter circles and no one enjoys telling them more than the pilots themselves. It's a deadly business but humor is never far away. ✚

**On his fifth try the target Tiger gave off a puff of smoke and started to descend just as the shooter ran out of ammo and had to head home with low fuel.**



## TIGER VERSUS ITSELF

In September of 1956, Grumman test pilot Tom Attridge experienced one of the most bizarre events in aviation—he shot himself down. Flying an early model F11F-1 Tiger, BuNo 138260, over the Atlantic south of Long Island, he was on the second test run of firing the four 20mm cannon at supersonic speeds. Accelerating in afterburner, he entered a shallow dive from 20,000 feet. He fired at 13,000 feet for four seconds, then a longer burst. Passing 7,000 feet something hit his windscreen. Attridge slowed down to take pressure off the windscreen and said a hole in his right intake duct was the only other apparent damage. However, he also could not go to more than 78% power without the J-65 engine running rough.

Two miles from the Grumman field at Bethpage, after lowering landing gear and flaps he saw that at 78% he was not going to make the runway. When he pushed the throttle forward the engine quit. The Tiger bellied into trees, the right wing and stabilizer tore off, and the Tiger burst into flames. Attridge managed to get out despite being injured.

Investigation revealed three hits: windshield, intake and nose cone. The 20mm slug that went into the intake was found—much chewed up—lodged in the first stage compressor section. A combination of the boresight at 0 degrees to line of flight, the half-G descent and drop in projectile velocity and trajectory resulted in the Tiger flying below and catching up with its own cannon fire after eleven seconds.

Early (short nose with refueling fitting) F11F-1 flown by a Grumman test pilot. A catapult launching bridle is attached to hooks on the belly. [Nat Archives/Tailhook]



# Loening C-2C Air Yacht

BY JOE GERTLER

**T**he Loening Air Yacht was the commercial evolution of the numerous military, single-float biplanes of the early 1920s. The upgrade replaced the old Army and Navy Liberty V-12s with the 525hp Wright Cyclone radial engine. It carried six or seven passengers with the pilot still flying from an open cockpit. It was one of the last single-engine, double-bay biplanes to be produced in the U.S.

In a rush to join the financial boom of the late 1920s, Kohler Aviation was formed in September 1929. With a fleet of several Loening C2C-1s, they filled the mission of carrying passengers the 90 miles from their Grand Rapids, Michigan headquarters to Milwaukee, Wisconsin, for \$30 round trip. The Air Yacht was a reassuring safety choice for flying over Lake Michigan.

It was a most unfortunately timed endeavor, as less than three months later the financial crash of October 1929 jeopardized their chances of surviving. Kohler's



Nicknamed "The Flying Shoehorn," the Loening C-2C Air Yacht gave "peace of mind" to passengers flying over Lake Michigan, and also resulted in saving several aircraft and crew that had emergency landings on the lake. While the passengers flew in a comfortable cabin with large windows, the pilot still sat out in the open cockpit. It had a 500-mile range, with a wingspan of 46' 8" and a gross weight of 5,900 lbs. The cruise speed was just over 100 mph.



passenger routes were sold to Northwest Airways, and they continued on as subcontractors to Northwest.

They eventually managed to acquire a much-needed airmail contract, in the heart of the Great Depression in March of 1933. In February 1934, their luck had not improved, when, in yet another odd series of decisions beyond their control, President Roosevelt decided to cancel all commercial Air Mail contracts and decided the mail should be carried by the military. This resulted from a national scandal of airline collusion and fraud, in the bidding for and rewarding of the Air Mail contracts. After many serious problems resulting from that decision, during which 12 pilots were killed, Roosevelt reversed his action and ordered the Air Mail contracts back to private carriers in May of 1934. After this

## SPECIFICATIONS

**Wingspan:** 46 ft., 8 in.

**Length:** 34 ft., 8 in.

**Power:** 525hp Wright Cyclone radial

**Empty weight:** 3,894 lb.

**Gross weight:** 5,900 lb.

**Cruise speed:** 102mph

**Max speed:** 124mph

**Range:** 500 miles

roller coaster of contracts won and lost, the unfortunate Kohler Airlines was unsuccessful in even regaining their old contract and was left out, forcing them to declare bankruptcy. They sold their interests to Pennsylvania Airlines in June of 1934, later to become Capitol Airlines in 1948, and eventually becoming part of United Airlines.

The Loening Company also went through a series of changes in its evolution. From its smaller facility in New York City in WW I, it merged as a division of Keystone Aircraft Corporation, with a massive plant in Bristol, Pennsylvania, in 1928 and moving in 1929. Soon after, it was acquired as The Loening Engineering Corp., Garden City, Long Island, NY, in the giant merger that formed the Curtiss-Wright Corporation in 1929, where Loening lasted until 1938. ✈







# “JUMPIN’ JACQUES”

*A Unique Mustang* BY ROBERT “CRICKET” RENNER

“We’d fly over the target, level, and the target would go under the wing. We’d be slowing down, and slowing down, pull up, and just do a wing over. Slightly beyond the target, pull over, and then come straight down. We had a gun sight, but [we’d] just line the target up on the seam of the cowling. We’d drop on straight down and pull out, and either hit the deck or pop up again and come back and strafe, depending on the opposition. Sometimes, if there was any gunfire, which I didn’t see much of, I’d stamp the rudder a little bit, left, right. You’d skid. Don’t keep the ball in the center was my tactic. They’d shoot to the right, and I’m going to the left.”



Peter Teichman pulls in close to the cameraship in his Mustang, currently painted as "Jumpin' Jacques." Teichman's Mustang, his first acquisition for the North Weald, England-based Hangar 11 Collection, is unique as it is one of only a few Mustangs with combat history. It still carries the field repairs from battle scars she received while flying with the 332nd Fighter Group. (Photo by John Dibbs/ [planepicture.com](http://planepicture.com))



## "JUMPIN' JACQUES"

Lt. Jacques Young in the cockpit of "Jumpin' Jacques," Laoag Airfield, Luzon, Philippines, April 1945. Note the Mustangs in the background with tail letters "A" and "Z." (Robert Renner via Kurt Young)



### Unsung Heroes of the South Pacific Campaign

The 3rd Air Commando Group (ACG) was activated on May 1, 1944. Its training focused on a unique mission: to establish and maintain airfields behind enemy lines, provide for its own supply and defense, and attack the enemy's rear areas and fly air support for allied infantry. The 3rd and 4th Fighter Squadrons were assigned to the group, along with liaison and troop carrier squadrons. Moving to the South Pacific in late 1944, the group was stationed at Leyte in December 1944, Mangaldan, Luzon in January 1945, Laoag, Luzon in April 1945, and Ie Shima in August 1945.

Originally conceived as a more powerful version of the 1st ACG that fought in Burma, the 3rd ACG soon discovered that Japanese tactics and the Philippine terrain were not conducive to commando operations. Instead of assault-from-the-sky operations dropping commandos behind enemy lines, the group quickly adapted to

in this list is Major Walker M. "Bud" Mahurin, of 56th FG fame, who also commanded the 3rd ACG. (After being shot down over France in March 1944, he was forbidden from flying further combat in Europe to protect the identity of the Resistance fighters.)

Lt. Jacques Edward Young was a Mustang pilot assigned to the 3rd Fighter Squadron, 3rd ACG, 5th Air Force, U.S. Army Air Forces. Lt. Young's son, Mr. Kurt Young, spoke to the author about his dad's experiences in the war. Jacques flew 101 combat missions in the Pacific between January 15 and September 1, 1945 (98 in Mustangs plus another 3 in P-40Ns). By the time he got there in 1944, if a Zero saw a Mustang, it would rapidly leave the area. A unique entry in Young's logbook is on June 4, 1945, when he was "Co-pilot with Maj Mahurin" in a B-25. When asked about this flight, Jacques said, "We had a B-25 in the group. He thought I had B-25 time. I thought he had time. We didn't have any time, it turned out, but brought it back."

### *HIS INSTRUCTOR TOLD HIM TO FLY BACK TO THE FIELD AND LAND, WHICH HE DID—ALTHOUGH HE HAD NOT BEEN INSTRUCTED HOW TO LAND THE AIRCRAFT!*

a more conventional type of war. This involved the Mustangs attacking the Japanese wherever they could be found, the Grasshopper liaison planes flying observation missions and personnel evacuations, and the C-47s hauling cargo.

Although the fighter pilots didn't see much enemy air activity, seven of them did score one aerial victory each while with the group. Included

Primarily serving in the air-to-ground role, then, the Air Commando Mustang pilots were known for their innovation. In one instance, Mahurin led a 16-ship formation over the airfield, breaking into the landing pattern with minimal spacing. This allowed the entire group to get on the ground in less than three minutes. Due to the Pacific's narrow airfields and increasingly heavy traffic, this technique soon became standard practice. After moving to Mangaldan, a dirt airfield in Luzon, the fighter pilots conducted four-ship takeoff in order to quickly get their formation

airborne and rendezvous. This was important for two reasons: Mangaldan was one of the busiest airfields in the Pacific, and, as Jacques Young put it, “We had lots of short missions” from there because the front lines were so close, often within 30 minutes’ flying time.

The fighter pilots of the Air Commandos would also go to the front lines to coordinate with the infantry. In one instance, with dug-in Japanese positions on the reverse side of some over-grown hills and friendly troops only 250 yards from the Japanese, the pilots convinced the ground commanders they could safely attack the enemy without having to pull back the friendly troops. Briefing the pilots back at the squadron, they plastered the Japanese forces so effectively that the commander said they took the position “practically standing up.” Major General W. H. Gill, commander of the 32nd Infantry, wrote that “we were forced to ask that air strikes be made within fifty to one hundred yards ahead of the infantry ... these strikes were, to my mind, perfection itself.”

After taking Laoag airfield (150 miles behind enemy lines) in April 1945, the Air Commandos were supplied by air for over a month. The group’s advance echelon moved to Ie Shima on August 9th—the same day that a B-29 named Bockscar dropped the second atomic bomb on Nagasaki. With the end of the war, the group moved to

Atsugi, Japan, until the fighter squadrons were deactivated in February 1946.

### **Lt. Jacques E. Young & “Jumpin’ Jacques”**

Lt. Jacques Young was studying at Purdue in 1943, while he was also enrolled in the Army ROTC program. When he was called up, he had already flown around 10 hours in the Piper Cub. He went to flight school in the Stearman PT-17 (soloing on October 20, 1943), the Vultee BT-13 “Vibrator” and the North American AT-6 Texan. His son Kurt says one of Jacques’ early flights in the BT-13 was interesting. During this flight, his instructor told him to fly back to the field and land, which he did—although he had not been instructed how to land the aircraft! Jacques graduated with class 44-D in Douglas, Georgia.

From there, he went to the Pacific, ferrying P-40s from New Guinea to the front lines. Kurt says his dad’s constant complaint about the P-40 was its poor radios. Having grown tired of ferrying P-40s, one day Jacques asked his commander if he could join the group that some newly arrived P-51Ds were being delivered to. The commander agreed, and there is a story that in late October, 1944, eight young lieutenants of the 3rd ACG went to New Guinea to pick up some brand new P-51Ds—an aircraft none of them had flown!

The 3rd ACG’s Mustangs carried the Pacific Theater markings, which resemble the more

“Jumpin’ Jacques” at Laoag Airfield, Luzon, Philippines, April 1945. A unique color photograph from World War II. Young’s father sent his son color slide film during the war, where Jacques captured beautiful images of his aircraft. (Photo courtesy of the Ethell Collection)





## "JUMPIN' JACQUES"

"Jumpin' Jacques" airborne on a combat mission loaded with bombs. The new pilots of the 3rd Fighter Squadron had Greek letters assigned to their aircraft; Young had Omega on the tail of his Mustang. Also note the Pacific Theater stripes on the fuselage and wings of the thoroughbred. (Robert Renner via Kurt Young)



familiar D-Day stripes but are much wider and consist of only three bands (a black-white-black stripe that runs around the aft fuselage and both wings) rather than five. For group markings, the fighters painted the top half of the vertical stabilizer blue, and each aircraft had a unique letter painted in yellow on the tail, from A through Z. When they ran out of English letters, the new pilots were assigned letters of the Greek alphabet. Jacques was the 10th new pilot, so he got Omega.

Jacques' assigned Mustang was dubbed "Jumpin' Jacques" and was adorned with Bugs Bunny on the side. The Bugs Bunny was his crew chief's idea, since he always had one on his aircraft. "Jumpin'

including a mission on February 16, 1945, where he remarked "Train sweep on Formosa. Destroyed one locomotive (assist)." Shortly after, on February 27, he flew a 1.5 hour combat sortie, dropping bombs and strafing Japanese positions in Baguio, then a couple of weeks later dive-bombing and strafing west of Clark Field. His entry on August 15, 1945, says "No More Shooting," signifying the end of the war. Lt. Young was at Atsugi by September 20, 1945, continuing to fly "Jumpin' Jacques" until their last flight together on January 16, 1946. By then, Young had accumulated 765 hours 25 minutes total flying time, with 522 hours 50 minutes in fighters.

Interestingly, Jacques' father, Ferris Young, was a balloon pilot in World War I in France. Although their family originated from Germany, Ferris gave his son a French name when Jacques was born in 1923. Post World War II, Jacques went back to college, graduating with the first aeronautical engineering class from Purdue in 1949. He also continued to fly fighters with the Ohio Air National Guard, flying P-51Ds and Hs and later F-84s. His unit was activated during the Berlin Crisis in 1961. Jacques accumulated about 6,500 hours in single-engine aircraft, with zero engine failures or flame-outs, and later became a Colonel in the Civil Air Patrol. He retired as an Air Force civilian from Wright-Patterson AFB, Ohio. The National Museum of the U.S. Air Force has on display a Japanese electrically heated flight suit and a silk parachute that Jacques brought back from Japan. He also flew the F-84 that's in the AF Museum, and he was also the last pilot to fly the F-84 on static display at the Air National Guard base at Springfield, Ohio. Humorously, Kurt says his dad wrote up the aircraft on that last flight for the radios ... he never told the crew chief he was fibbing!

Many black and white photos exist from the war, mainly because black and white film was easily developed. Jacques' father, Ferris, sent him Kodachrome color film, and Jacques took pictures, mailing the film home to be developed. The color photos of "Jumpin' Jacques" are, therefore, unique.

## HIS ENTRY ON AUGUST 15, 1945, SAYS "NO MORE SHOOTING," SIGNIFYING THE END OF THE WAR

Jacques" was so named because he liked to "jump" other pilots from their 6 o'clock. Jacques was tall enough to easily turn around in the cockpit to check six directly so his aircraft never had a mirror installed on the canopy.

There are some interesting entries in Young's logbook. For instance, his combat missions ranged in flying time between 50 minutes and 6 hours. The 6-hour hops were flights to Formosa,

Beautiful color portrait of P-51D "Jumpin' Jacques" of the 3rd Fighter Squadron, 3rd Air Commando Group, in April 1945, at Laoag Airfield, Philippines. (Robert Renner via Kurt Young)



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## JUMPIN' JACQUES' HOME PETER TEICHMAN'S HANGAR 11 COLLECTION



On any given day in the skies over England, you might be lucky enough to see Peter Teichman practicing his impressive demonstration routine in a pristine P-51D Mustang named "Jumpin' Jacques." Peter has about 8,000 flying hours, of which over 2,000 are on warbirds. He counts, however, over 11,000 flights in his logbook, meaning he doesn't have a lot of what pilots call "droning time"—cruising at altitude on autopilot. Registered as G-SIJJ (SI being similar to 51, and JJ for "Jumpin' Jacques"), Peter's Mustang was his first acquisition for his North Weald-based Hangar 11 collection of warbirds.

Founded in 2002, the Hangar 11 Collection currently boasts four flyable fighters from World War II: a Curtiss P-40 Kittyhawk, a Hawker Hurricane Mark IIB ("Hurribomber"), a Supermarine Spitfire Mk XI (photo-reconnaissance version), and "Jumpin' Jacques." Peter and the staff at Hangar 11 pride themselves that their airplanes are "absolutely stock. Every time you open a panel and shine a torch into the darkness," he says, "you see the original date stamps on original parts from the factory. In our Kittyhawk, for instance, pretty much every bit of the airplane was produced in the Curtiss factory. It is a great passion of mine—we only buy really original airframes."

Peter got bit by the flying bug when he moved in 1977 under the

circuit of Elstree Airfield (on the north side of London). "Seeing the airplanes flying overhead made me yearn to fly, so I started lessons in February 1979, getting my license that fall. My daughter was born shortly after, and I remember taking my wife flying whilst she was very pregnant. "By the way," he adds, "my wife still flies with me, as we are certainly a very aviation-centric family, although I haven't persuaded her to fly with me in the Mustang yet!"

He owned a 1942 Beech Staggerwing and later flew a Harvard, becoming interested in vintage airplanes. In 2002, he was finally able to fulfill his dream by purchasing "Jumpin' Jacques." When he heard "Jumpin' Jacques" was available, he was in France within 24 hours. "A short time later, I brought her home on an epic, freezing day in December 2002, and soloed it shortly thereafter."

Since then, he has added the Spitfire in 2004, the Kittyhawk in 2005, and the Hurricane in 2009. Hangar 11 is also currently restoring a Spitfire Mk IX, a lend-lease aircraft that crashed in Russia in early 1945 after a mid-air with another Spitfire. When it went down, it had only 28 ½ hours on the clock. A Russian farmer had kept the aircraft in his barn for 40 years, and more importantly, he had kept the aircraft complete during that time. "It will be a unique aircraft in terms of history and originality. There's

nothing else like it," Peter says. He flies all the aircraft in the collection as the chief pilot, and he's been on the display circuit for the last 15 years, flying displays at major airshows and private events in the UK and all over Europe.

Flying such iconic aircraft, Peter is often asked what his favorite airplane is. Unreservedly, he says it's the P-51 Mustang, having now done over 800 flights in it to date. "If you look at the Spitfire or Hurricane, they are obviously designs of the 1930s. They can't compare to the Mustang. It was a design ahead of its time. It's more rugged than the other fighters, and it's just a brutal, fantastic airplane. "However," he continues, "it's not as forgiving as the other aircraft. It will depart controlled flight easily, and it has one or two bad habits that will kill you." The Mustang, he adds, is "fast, comfortable, efficient, and a great multi-role airplane, whereas the Spitfire or Hurricane were fighters only, limited by fuel and firepower. They were meant to get up and down quick, but the Mustang went to Berlin and back! It will certainly be the last airplane I sell."

Although Peter's Mustang is at home in the European skies, it is not currently painted like a European veteran. Instead, it wears the paint of Lt. Jacques E. Young's trustworthy steed—an aircraft that flew in a relatively unknown unit on the other side of the world.

## A Mustang's Biography

Peter's "Jumpin' Jacques" is a P-51D-20-NA, built at North American's Inglewood factory in California. Accepted by the USAAF on December 21, 1944, with the tail number 44-72035, she was originally planned for the Eighth Air Force in England, but this was changed. Leaving California on January 4, 1945, she arrived in New Jersey on January 10. She left by boat on January 24, bound for Italy, where she would be assigned to the 332nd Fighter Group.

Known today as the "Tuskegee Airmen," the 332nd FG was the first all African-American Fighter Group. During the war, the group was known as the "Red Tails," for their brightly-painted aircraft tails. Mustang 44-72035 entered combat in March 1945, flying bomber escort and ground attack missions over Germany, Austria and Czechoslovakia. During this time, she received some battle scars—holes from bullets that went right through the aircraft skin. She still carries the corresponding field repairs from those scars.

The 332nd FG remained in Italy until the summer of 1945, returning their newer aircraft to the USA for continued service.

Aircraft 44-72035 returned to the USA on October 10, 1945, and was placed into storage. In January 1947, she was overhauled and sent to her first ANG assignment with the 125th Fighter Squadron of the Oklahoma ANG in Tulsa. She flew with several other ANG units, including squadrons in Nevada and Idaho. With the escalation of the Korean War, 44-72035 was transferred to the USAF and had "U.S. Air Force" applied above the serial number on the vertical fin, and "FF-035" applied on the fuselage below the cockpit. Evidence from these markings is still visible in the metalwork.

On March 12, 1953, 44-72035 was sent back to the ANG, and in October 1956, she was retired from military service and placed into storage. Less than a year later, she was sold to Whiteman Enterprises of Pacoima, California, for \$1,110. (Adjusted for inflation, that is less than \$10,000 in today's money!) She was registered as N5411V on September 25, 1957, with just under 1100 total flying hours. She wore an all-yellow paint scheme for the 24 years she was owned by Whiteman Enterprises, until in December



**Left:** Bugs Bunny was Lt. Young's crew chief's idea, who always had one on his aircraft.  
**Bottom left:** Young named his Mustang "Jumpin' Jacques" because he liked to "jump" other pilots from their 6 o'clock position ... the reason fighter pilots remind one another to "Check six!"  
**Right:** Peter Teichman shows the business end of the Mustang. Not a sight the Japanese pilots wanted to see! (Photos by John Dibbs/ planepicture.com)



1981, she was sold to Humberto Escobar of Bogota, Colombia. After 8 years in South America, she was exported to France in August 1989 for Mr. Jacques Bourret. Coming across photos of "Jumpin' Jacques," he painted his newly-acquired Mustang in her current scheme.

In 2002, Peter Teichman brought "JJ" to England, where he updated the paint scheme, declaring it to now be "absolutely authentic." While preparing her for repainting, Peter discovered red paint underneath some of the yellow paint (from its time as N5411V). A little bit of investigation revealed this was original Red Tail paint.

#### **FUTURE OF JUMPIN' JACQUES**

Peter says owning a warbird is a "big labor of love, and I consider myself a custodian of history. I want

to make sure these airplanes are passed on to the next generation, so we look after them very, very carefully." He goes on to say, "I am a flier, and I like to think my Mustang is sweeter and faster than other Mustangs. It's a stock airplane and handles like a stock airplane." In 2009, Peter flew his P-40 to Prague, Czech Republic to fly in the movie *Red Tails*. Unfortunately, "Jumpin' Jacques" was unserviceable, so it stayed in England. While on set, he met Roscoe Brown and Lee Archer, two of the original Tuskegee Airmen. Mustang 44-72035 will soon begin a new chapter in its life, with a "full circle" transition to its original paint scheme as a Red Tail Mustang of the 332nd Fighter Group. The exact details of its new scheme are still under wraps, however, and will be revealed later this year. ✚

*The author would like to thank to Mr. Peter Teichman and Mr. Kurt Young for taking time out of their busy schedules to be interviewed for this article. Also, thanks to the Air Commando Association ( <http://specialoperations.net/>) for information on the 3rd ACG.*



## Germany's V-1 Buzz Bomb

**The first effective drone** BY BARRETT TILLMAN



The V-1 "Buzzbombs" were unguided other than having an engine control that would shut off when it was in the area of the target. It carried 1,870 pounds of explosives. The Flying Heritage Foundation displays their V-1 along with a V-2. Photo: Heath Moffett Photography

**Gerhard Fieseler remains one of the** most unappreciated airmen of the 20th century. At age 22, Fieseler came to prominence as Germany's leading World War I ace on the Eastern Front, scoring 19 victories. A world-class aerobatic pilot, by 1930 he earned enough to buy out a sailplane company that became Fieseler Flugzeugbau. Flying his own design, he won the world championship in 1934 and expanded his business, producing the classic Storch in 1936.

During the next war, Fieseler sub-contracted Bf 109s and FW 190s, but made a technological leap with the Fi 103—the world's first practical cruise missile.

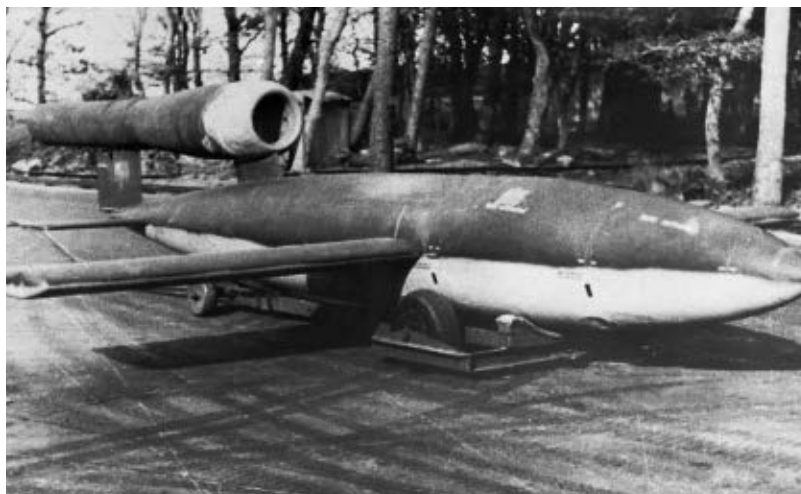
Due to the project's extreme secrecy, the V-1 was called Kirschkern (Cherry Stone) and the Fieseler FZG-76, "antiaircraft sight." More popularly it was dubbed Maikäfer, or Maybug, becoming "Doodlebug" to the Allies.

The V-1 began in 1936 as a concept from the Argus Motor Company, producers of the Storch's engine. Three years later, shortly after WW II began, Argus teamed with Arado and another firm to propose a pilotless, remotely-guided aircraft. The Luftwaffe had little interest at first, but

in June 1941 Fieseler was selected as manufacturer of Adolf Hitler's first Vergeltungswaffe, or vengeance weapon—the V-1. By then Argus was well along developing a pulse-jet engine producing about 650 pounds of thrust.

Following development at Peenemünde on the Baltic, the V-1 was first flown in December 1942. Construction was sheetmetal fuselage and plywood wings.

The V-1 was an "area weapon," incapable of bombsight accuracy but adequate to hit somewhere in London, one of the



Although barely visible, this Fi 103 (V-1) carries the number M23 on the rudder painted in white and was photographed at the Peenemünde test center in October 1943. This was the 23rd production machine and is standing on a trolley ready to be taken to the launch ramp for a test flight.

world's largest cities. Direction was determined by a gyro-stabilized autopilot while a propeller in the nose was set to shut off the engine after a specific number of revolutions. When the pulse jet stopped, the V-1 nosed into a terminal dive and exploded on impact. The Kirschkern's powerful warhead was 1,870 pounds of Amatol, a binary explosive of TNT and ammonium nitrate.

Launch sites in northern France opened the V-1 campaign on June 10, just after D-Day. Only four of the first 10 landed in Britain.

The missile came off the launcher at about 350 mph, sometimes achieving 400 at the typical cruise altitude of 3,000 feet. With a range of some 150 miles, Doodlebugs in Northern France and Holland were well within reach of metropolitan London.

London was ringed with anti-aircraft guns in multiple belts from the coast inland, plus barrage balloons. Gunners learned to lead the "doodlebugs" at various deflection angles, but the most effective defense was standing fighter

**Direction was determined by a gyro-stabilized autopilot while a propeller in the nose was set to shut off the engine after a specific number of revolutions.**

patrols. The best V-1 killer was Hawker's superb Typhoon, with four 20mm cannon and 430-mph speed. Seven of the top 10 V-1 aces flew Tempests, led by Wing Commander Ronald Berry with 60. Mosquitos, Spitfires, and Mustangs trailed in that order.

Amid the grim reality was occasional mirth. A 16-year-old aviation enthusiast quickly learned to duplicate the staccato sound of the V-1's engine, considering it grand sport to see how quickly the adults could duck under tables and chairs. Twenty years later he was an RAF wing commander who could still produce that sound at pub parties.

When Glenn Miller's Army Air Forces Band arrived in London in June 1944 the group was quartered in west London, amid "Buzz Bomb Alley." Shortly thereafter Miller moved the band, and a day later a V-1 destroyed the previous building, killing scores of people.

Meanwhile, a political battle centered on the V-1 was waged across the Atlantic. On the "Potomac Front" the U.S. Army clashed with the Marine Corps in mid-1944 when Corsair squadrons prepared to deploy with large Tiny Tim rockets considered accurate enough to destroy pinpoint targets like V-1 launchers. During a briefing by Cdr. Thomas Moorer—a future Joint Chiefs chairman—Gen. George C. Marshall stood up: "That's the end of this briefing. There'll never be a Marine in Europe as long as I'm Army Chief of Staff."

Of some 8,000 V-1s launched, perhaps 2,500 survived the defenses or avoided mechanical error. They inflicted nearly 23,000 casualties and destroyed or damaged 1.1 million buildings, or fewer than three casualties per launch.

The V-1 campaign largely ended in September 1944 when Allied armies over-ran French launch sites. Nocturnal launches

from German bombers continued sporadically thereafter, lasting almost until war's end.

A piloted V-1 gained support owing to an odd cast of players including SS chief Heinrich Himmler, ever adding fiefdoms in the Nazi hierarchy. His top commando, Colonel Otto Skorzeny, knew test pilot Hanna Reitsch, who endorsed the concept. Design and testing began in the summer of 1944, producing the Fi 103R for Reichenberg. Though the pilot could jettison the canopy, the mission profile was essentially a Teutonic kamikaze.

Transition from cruise missile to piloted suicide aircraft proved nearly impossible. Testing resulted in two crashes—one fatal—before Reitsch completed a successful flight. In late 1944 V Gruppe of KG 200, the Luftwaffe's special-operations wing, was designated the Reichenberg's operational unit. But



A piloted Buzz Bomb, technically a Reichenberg, pictured at Freeman Field after the war.



Captured V-1s led to the rapid U.S. development through Wright Field for Republic and Ford to manufacture near 1,800 examples as the JB-2 Loon, intended for both ship and aircraft launch during the Invasion of Japan. Seen here at Holloman AFB in 1948, the 1st Guided Missile Group continued developing launch and guidance technology in advance of the upcoming MX-771 Martin Matador project.

production and technical problems dragged on until March when the project was canceled after some 175 Reichenbergs were built.

Far downstream in the entertainment world, the V-1 was subject of a fanciful 1965 movie, *Operation Crossbow*. The cast had a high "babe factor" with Sophia Loren and Barbara Rutting as Hanna Reitsch.

Reverse-engineered V-1s were tested in America before war's end, a collaboration between Republic and Ford becoming the JB-2 Loon. Navy missiles were launched from surfaced submarines in 1947, showing the way toward 21st century weapons.

Some three dozen V-1s are displayed worldwide, including at least 15 in the U.S. Additionally, four Reichenbergs are known surviving. †



# HAWK-33

## A DAY IN THE LIFE OF A VIETNAM COBRA PILOT

BY THOMAS MCKELVEY CLEAVER

U. S. Army Bell AH-1G Cobra  
(67-15865) of the 361st Assault  
Helicopter Company near Phu  
Cat, South Vietnam, on April 20,  
1971. (Photo courtesy of Norman  
Taylor via rfd)



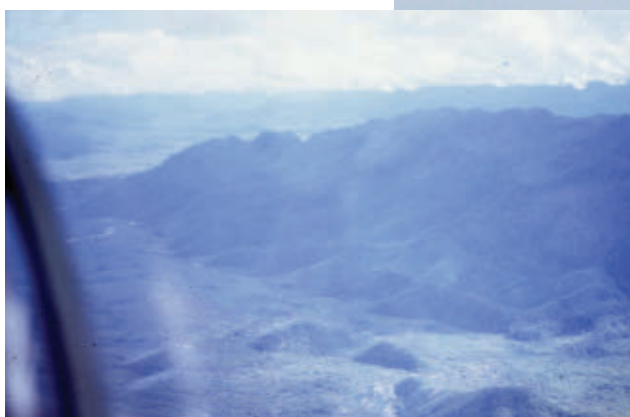
**March 20, 1971, was not a good day** for American and Vietnamese forces engaged in Operation Lam Son 719. Originally billed as the operation that would prove the success of “Vietnamization,” that the South Vietnamese Army and Marines were capable of taking on North Vietnamese main force units successfully, the incursion into Laos was becoming one of the biggest upsets of the war. Rather than demonstrate South Vietnamese military competence, North Vietnamese superiority was on full display. As Army Aviator Major Terry Morris remembered the battle, “Lam Son 719 was much worse than they ever let on. Officially they said we lost a couple hundred aircraft, but it was really more around 1,200 or so. They would tell us before a mission that if we went down, to try and bring back something from the aircraft so they could call it ‘combat salvageable.’ But for 90 percent of those, there was nothing to salvage. They were dead.”

### Lam Son 719; A Hoped-For Victory

The objective of Lam Son 719 was disruption of a possible future offensive by the People’s Army of Vietnam (PAVN). The Americans hoped that a quick victory in Laos would bolster the morale and confidence of the Army of the Republic of Vietnam (ARVN), and demonstrate that South Vietnamese forces could defend their nation as U.S. ground combat forces withdrew. Unfortunately, Lam Son 719 collapsed into a disaster for the ARVN that decimated some of its best units and destroyed the confidence built up over the previous three years.

Cobra pilot First Lieutenant Terry Morris had joined the Army in 1963, where he served in the 82nd Airborne, volunteering for Special Force in 1966 and serving as an explosives expert with the 10th Special Forces Group in Germany. His request for flight school came through in 1967. “The CO said if I would stay, he’d guarantee E-7 in six

Months. We were based at Lang Vei up on the Vietnam-Lao-tian border, though we were regularly based out of Phu Bai.” As a gunship pilot, he flew the new Bell AH-1G Huey Cobra. “The Cobra was wonderful to fly and great for combat compared to the UH-1C I flew during my first tour, but the missions were awful. We in the Cobras would pick up a formation of 30-40 ‘slicks’ (transport helos) going into Laos with troops, and the Cobras would



months. I turned it down to go to flight school and go to Vietnam.”

On March 20 Morris was flying a second combat tour as a gunship pilot with D Company, 101st Aviation Battalion, 101st Airborne Division, having arrived in-country shortly before Lam Son 710; he had flown missions every day of the operation. “We operated out of the Special

be out to the side looking for guns. The NVA would open up on the formation, and they would concentrate on one bird. The others would spread out away from that one, and the NVAs would keep at it until they got it, then they would do the same to another one, and then another one. Below 2,500 feet, you were taking 7.62, .50 caliber, and 23 millimeter ZSU stuff. Above 2,500 feet you would take fire from the 37mm and 57mm guns, and above 10,000 feet you’d get 90mm AAA. The AAA concentrations in Lam Son 719 were some of the heaviest of any wartime operation ever, including the Ruhr

**Above:** The Cobra’s strike capabilities and crew protection have steadily improved. The twin-engine Cobras being flown today, although based on the same airframe, are greatly superior over their Vietnam era ancestors.

**Left:** A-Shau Valley from north end looking south. Hamburger Hill is on the right. (Photo by Terry Morris)



in Germany in World War II. The first couple days, it was a turkey shoot for us, but then they brought in their AAA and it was a turkey shoot for them. Some of the slick units got their clock cleaned for losses. After the first two days, it was suicide going in there. If you were down low, an NVA company might just open up with their AK-47s, firing straight up, and you'd fly through it."

"We weren't supposed to fly more than 80 hours a month. If we flew more than that, we were supposed to be certified OK to continue flying by the flight surgeon. I had 160 hours in 20 days during this op. The flight surgeon would ask us if we had trouble getting in and out of the bird, and if we said we didn't, he said we were OK to fly, that's how bad things were."

The AH-1G Huey Cobra, developed from experience with UH-1B and C-model Huey modified as gunships earlier in the war, arrived in the nick of time for the kind of combat now happening. "When they started bringing in the AAA, we found that the 20mm cannon on the AH-1G had longer range than their ZSU-23. If we could see where the smoke was coming from when they opened up on us, we could hit them and be out of their range. But then they started mounting the positions in triangles, so if you went after one and you were out of its range making the attack, it would put you in range of one of the other two. If a ZSU-23 caught you flat-footed, it could really tear you up. Most of the time, their sights were set for a fast-mover, so you would get air bursts ahead of you,



A Christmas card a couple of us had made to send home to family. They didn't see the humor in it. (Photo by Terry Morris)

Cpt. Fletcher, CW2 Browning and Lt. Bryson standing beside AH-1G waiting for mission launch during Lam Son 719 (Photo by Terry Morris)





**IF YOU WERE DOWN LOW, AN NVA COMPANY MIGHT JUST OPEN UP WITH THEIR AK-47S, FIRING STRAIGHT UP, AND YOU'D FLY THROUGH IT."**

which was a good warning they were down there. The same was true of the 37mm. This gave us time to get out of the way and come back at them. The 57mm would explode with a puff of smoke about as big as a house."

### **A Most Satisfying Mission**

Morris' most satisfying mission in the midst of the disastrous operation occurred on March 20, 1971. "We were operating near Firebase Lolo, 20 miles into Laos, and got a call from ARVN Rangers cut off and needing pickup. They were in a 'hover hole,' a small clearing in the jungle, where a helicopter would have to come to a hover above the canopy and then drop in to get them. The slicks said it was too tight to get in there, hovering in under fire. I told them we'd give them support. When we got there, I saw it was a real small valley—maximum performance in and out, it was so high. The slicks didn't think they could do a hover to get in there. I said we'd hose the place, but they said it was too hot and too high and they were aborting.

"I told my wingman I was going to fire off my



ordnance and burn off fuel and he should cover me because I was going in. I hosed down the area and got myself down to about 200 pounds of fuel. I told my front-seater that when we got in, we would be able to take four of them out. They should tie themselves to the skids with their pistol belts. He told me there were eight hanging on now, so I had him lower the ammo doors, and we got two on each door, after we got them to drop all their gear and weapons to lighten the load. I brought the collective up to 40 pounds of torque and pulled all eight out of there, it was really tight. We flew at low speed, scaring the hell out of them, and got them down to Lang Vei. I never saw them again."

### **One "Fire Alarm" After Another**

For Morris, Lam Son 719 was one "fire alarm" after another.

**Top:** The only known photo of Bell UH-1D Iroquois, or Huey, helicopters at Landing Zone Xray during the final hours of the Battle of Ia Drang Valley on November 18, 1965. The helicopters belong to the First Cavalry Division (Airmobile). (Photo courtesy of Robert F. Dorr collection)

**Above:** Soldiers of the 4th Battalion, 173rd Airborne Brigade, load wounded aboard a Bell UH-1D Iroquois, or Huey, for medical evacuation after the assault on Hill 875, near Dak To, South Vietnam, on November 23, 1967. (Photo courtesy of Robert F. Dorr collection)





**Top:** The pilot's flight console in the back of the AH-1G Cobra. (Photo by Terry Morris)

**Above:** The business end of the 20mm Gatling gun and rocket pod on the AH-1G. (Photo by Terry Morris)

"A week after that rescue, we were on our way out of Firebase Vandergriff when I saw a Loach (OH-6A) on its side, halfway down a mountain slope and real close to a sheer cliff. I spotted the pilot and crew chief at the top of the hill. There were NVA coming up the other side, so there was no time to call for a slick. I brought the Cobra in and put the front tips of the skids on the cliff edge with the rest of the aircraft out over the edge, and the guys got onto the ammo doors and I got them off just as the NVA arrived. When we got back to Vandergriff, the pilot, a captain, asked my name and told me he wanted to write up a recommendation for a medal. I told him I hadn't gotten the Soldier's Medal yet, so he said he would recommend that. Instead, because the rescue had been made under fire, they gave me the Distinguished Flying Cross. No other Cobra crew managed any

rescues like those that I know of.

"Throughout Lam Son 719, we were pulling people out of tight spots. We'd find ARVNs on a hilltop, with NVAs 30-40 yards away, and the Cobras would give support while the Slicks pulled them out."

Morris has no difficulty remembering the worst mission during Lam Son 719. "We only lost one Cobra. We got a call to cover the extraction of ARVNs who were surrounded in a bomb crater. The slicks couldn't put down in the pickup zone due to enemy fire and the fact there was so much smoke they couldn't see the ARVNs. Our commanding officer ordered Captain Keith Bryant, our maintenance officer, to take one of the Cobras to provide cover. Captain Bryant was set to leave the next day on R&R to Hawaii, and his wife was already waiting for him. He was told he would have to take the mission because we were short-handed. I flew as his wingman. We got over the position and there was lots of smoke. He went down to mark the pickup zone and took a lot of fire from the ridge overlooking the position. He called they were hit and had a fire, that his hydraulics were out and he was activating the accumulator. That would give you enough power to make three control moves in a crash, which could be the difference between living and dying. He came out of the smoke and I could see the fire, and then he called 'I've lost the accumulator.' The Cobra rolled over and went in. His body and his co-pilot's were only recovered in 2006."

In the midst of the operation, Morris had the opportunity to demonstrate what the Cobra could do in all-out combat. "There was a Special Forces Hatchet Team in Laos—five Americans, 20 Montagnards—who were surrounded by the NVAs. They'd set up a 37mm anti-aircraft gun on a nearby hill. The team was bait to get any helicopter that tried to get them. The slicks were waiting to go in. I volunteered that I'd nail the 37mm so the slicks could make it. My gunner turned white when I said that. I told him if he didn't want to go I'd put sand bags in front and go by myself."

Checking the situation on arrival, Morris came up with a plan for a surprise attack. "I flew north of the position, then got right down over the triple canopy and came in. I popped up to 1,500 feet and saw the gun right away. They saw me and started training it around. I fired all my rockets, then hosed them with my 20mm cannon and took out the gun. I made a hard break to the right, and every warning light on the panel went off! I thought I'd been hit, but the engine and controls still worked, so I nursed it back to Phu Bai while the slicks got the team."

Back at base, the Cobra was thoroughly checked. "We found the wiring bundle was chafing against the fuselage, and when I pulled that maneuver, I made it short out. That probably was the biggest pucker factor of any mission I flew over there."



**I FIRED ALL MY ROCKETS, THEN HOSED THEM WITH MY 20MM CANNON AND TOOK OUT THE GUN. I MADE A HARD BREAK TO THE RIGHT, AND EVERY WARNING LIGHT ON THE PANEL WENT OFF!**

### Hitting the NVA In Laos

A few weeks later, the Cobras were called when a Special Forces team in Laos reported an NVA force constructing bunkers, and the Green Berets could hear them working in an open field. "They decided to send in a Hatchet Team to try and grab prisoners after we attacked while the slicks were extracting the team. We came around the hill south of the target. The ground team let us know the NVAs had heard us and most had taken cover in a ditch while the others were running for the trees. I made a run on the ditch and strafed with 20mm, then my wingman fired rockets when they came out of the ditch. The Hatchet Team was on the ground four minutes when the NVAs came out of the treeline. I slowed to 40 knots to maximize my time and hosed them with everything. The slicks picked up the team.

"When we landed back at Marble Mountain, these guys came running over, slapping the bird, I thought we had done something wrong. A slick pilot thanked me for coming alongside when he was under fire and interposing myself so they could make the pick-up. I wasn't doing that! When I checked the Cobra, there were seven .50 caliber hits that had just missed the tail rotor controls. I hadn't heard anything over the noise



of the 20mm I was firing. The Army gave me the Silver Star for that one."

### The Huey Cobra Was A Real Fighter

Having flown the UH-1C Huey modified as a gunship during his previous tour in Vietnam, Morris really appreciated the AH-1G Cobra. "The UH-1C had an L-9 engine with 900 shaft horsepower engine with a 540 rotor system, and was underpowered. It was like driving a Model T. You had to 'porpoise' to build up speed—dive at the ground, pull up, then do it again. When you'd refuel, the crew chief and the gunner would have to run alongside the aircraft until you got lift, then throw themselves aboard. As a gunship, it carried 5,000 rounds of 7.62, and 14 rockets in two pods. You had to have finesse to fly it on its best day.

"The Cobra on the other hand, had lots of power. But even with all that, with a full load

**Top:** In the AH-1G, the crew had an enormous amount firepower, including 20mm Gatling guns, 7.62mm Gatling gun, and 40mm, which was in addition to a pair of rocket pods on each side. It was as lethal as any ground attack machine ever built. (Photo by Jay Miller)

**Above:** The rocket pods can be two 17-shot units and two seven-shot outboard of those. (Photo by Jay Miller)



Cobra gunship at Fire Base Libby on Highway QI 20. The photo was taken in June 1969, near the city of Xuan Loc, Nui Soc Liu mountain, Đồng Nai Province, Vietnam. (Photo by 1LT. B.J. Khalifah Co. A/5 th Bat/12-th Infantry /199 Light Infantry Brigade)



**WHEN WE ARRIVED, THE HILL, WHICH HAD BEEN CLEARED OF TREES, SEEMED TO BE MOVING. AS THE SUN CAME UP, I COULD SEE WHAT LOOKED LIKE A THOUSAND NVA SOLDIERS CLIMBING THE HILL.**

ball field. The Cobra was highly maneuverable, and since it was only 36 inches wide when it was head-on, it was a very hard target to hit.

"Flechettes could do real damage. We once had an NVA lieutenant surrender. He told us he and his company were under the canopy when he heard helicopters overhead and he took cover. After they passed, he went back on the trail and there were all his men, dead, and he hadn't heard a thing. It was a sniffer mission, a UH-1 flying 50-100 feet above the jungle, with equipment that could sense ammonia below. The operators at first couldn't tell if it was humans or animals, but they later got pretty good at telling the difference from the size of the return. They'd call the Cobra that was escorting them and mark the spot and the Cobra would fire nails. There's no noise when the flechettes went into the jungle, and they could take out anything."

As good as the Cobra was, even armed with flechettes, there were times it wasn't enough. "During Lam Son 719, I once flew 23 hours straight out of 24, giving support to a Special Forces camp above Khe Sanh that overlooked the Ho Chi Minh Trail in Laos. They reported they were being overrun. When we arrived, the hill, which had been cleared of trees, seemed to be moving. As the sun came up, I could see there was what looked like a thousand NVA soldiers climbing the hill. I went to the other side and saw more of the same. I came back and salvoed my nails and rockets at the first target, then hosed the other side with the 20mm, the minigun and the 40mm. After I expended everything, I called the Air Force FAC and asked him for a body count. He told me "I stopped counting after 300." The sad thing was, the camp still got overrun and we still lost the team in the end."

### The Hairiest Mission Didn't Involve Combat

Morris' hairiest flying incident didn't involve combat. "The monsoon came in May and closed everything down, storms that had just sheets of rain. After a couple weeks we got this beautiful clear day and I decided to take a run out over the Ashau Valley. Jim Browning, a very experienced pilot with 7,000 hours, went along with me as co-pilot (I had 2,500 hours at the time). We went out and as we turned to return to Phu Bai, I could see the wall of water of another storm coming, between us and where we wanted to go. Neither of us were fully instrument rated or current. We got into the storm and you couldn't see twenty feet in any direction. We got down real low and opened the side windows, and with Jim looking

left and me looking right, we hovered down the river that flows out of Ashau, all the way to the coast. Once we got there things cleared and we were able to fly on up to Phu Bai and recover."

Terry Morris had been promoted to captain when he returned from his second tour in Vietnam and returned to Special Forces. "We supported a unit called Greenlight, better known as the Delta Force." Later he was promoted to Major and became commander of the First Special Forces Company. After twenty-five years in the Army, he retired in 1988 and went into law enforcement in Alabama, where he served another 20 years before retiring for good. During his two tours in Vietnam, Major Morris earned the Silver Star, four Distinguished Flying Crosses, 53 Air Medals (three with V Device for Valor), the Bronze Star, four Purple Hearts, ARCOM with V, and miscellaneous "I've been there" medals. †

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# Lockheed PV-2 Harpoon

The Little Known Warrior

LUIGIANO CALIARO

**T**he Lockheed PV-2 Harpoon was probably one of the least known bombers of the Second World War, but it is certainly not the least important. In fact, its work as a reconnaissance and patrol aircraft conducted principally in the Pacific Theatre and the difficult sector of the Aleutian Islands, was vital to the U.S. The Harpoon evolved from the Lockheed Hudson that had flown with the RAF. That success led Lockheed to propose a military version of the larger Lockheed 18 Lodestar, and total of 675 of these aircraft was contracted for the RAF, which named the type the Ventura. Although its performance was quite good, the Ventura was found to be unsuited to daylight bombing operations and was transferred to Coastal Command.

During 1943, Lockheed produced a new version of the Navy PV-1 Ventura, designated PV-2 Harpoon, which was a major redesign with increased wing area and expanded load-carrying capability. The new version made its maiden flight on December 3, 1943 and, like its predecessors, the PV-2 Harpoon was built by Lockheed's Vega

subsidiary. The motivation for redesign was to correct the weaknesses in the PV-1, which demonstrated poor takeoff performance at full fuel load.

On the PV-2, the armament became standardized at five forward-firing machine guns. Many early PV-1s had a bombardier's position, which was deleted in the PV-2. Some other significant developments included the increase of the bomb load by 30% to 4,000 lb, and the ability to carry eight 5-inch (127 mm) HVAR rockets under the wings. While the PV-2 was expected to have increased range and better takeoff, the anticipated speed was expected to be lower than the PV-1, due to the use of the same Pratt & Whitney R-2800 engines and an increase in weight. The Navy ordered 500 examples.

Early tests indicated a tendency for the wings to wrinkle dangerously. As the problem could not be solved by a 6 foot reduction in wingspan (making the wing uniformly flexible), a complete redesign of the wing was required. This hurdle delayed entry of the PV-2 into service. Those PV-2s already delivered were used for training purposes under the designation PV-2C. By the end of 1944, only 69 PV-2s had





Although the hard-hitting PV-2 Harpoon is a lesser known WW II warrior, it nonetheless played an important role in holding the enemy at bay in the Aleutians both as a bomber and a ground attack machine.





**Left, top:** With each of the throttles controlling a 2,000 hp, P & W R-2800, this is not an airplane for just any pilot.

**Left, bottom:** The most difficult part of such a detailed restoration is finding items that were removed after the war, like the navigator's table and top turret.



been delivered. They finally resumed when the redesign was complete. The PV-2 was taken into combat for the first time in March of 1945 by VP-139, one of the original PV-1 squadrons. The combat use of the Harpoon by the Navy was fairly brief, and was cut short by the end of the war in August.

Today in the U.S. at least three Harpoons are flying, including the one operated by Dave Hansen of the Warbird Warriors Foundation. He had found the aircraft semi-abandoned on a ramp in Wyoming. It took a year to get it in ferryable condition and to its new home in Heber City, Utah. There, Hansen, with a group of friends and volunteers, began the restoration to return it to the exact condition, internally and externally, of an aircraft that flew during the war in the remote Alaskan theatre. Many parts were missing, mainly because in its latter years it had been used to spray insecticide. In particular, much work was required to restore and install the dorsal turret and the inside of the aircraft.

On May 23, 2009, after two years and thousands of hours of work, the restoration team achieved its goal of returning the aircraft to the air. Thanks to the talent of Dave Mueller, a local artist, it was decided to apply the "Attu Warrior" nose art, with which Hansen is trying to represent all the aircraft that flew in the remote and almost forgotten theater in the Aleutian Islands. Specifically, the Harpoon honors VPB-139 whose task was to fly strikes at the northern end of the Japanese Empire, in the Kurile Islands, and made searches and photographic runs over the area.

Today *Attu Warrior* is based at Heber City, Utah, the home of the Warbird Warriors Foundation. ✈

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Restoring something as big as the Harpoon to original configuration is a mind-numbing project. However, Dave Hansen, friends and volunteers, pulled it off admirably. The aircraft is on display in Hansen's Warbird Warriors Foundation museum in Heber City, Utah.



The ventral gun position is complete including the ammo chutes feeding the two Browning fifties.

**Right:** The aircraft was known for its long range patrol capabilities which necessitated a lot of fuel tanks and the valves to control them.

**Below:** Besides mounting four 2.75 HVAR rockets on each wing, the Harpoon's trio of Brownings were concentrated on a single point.





# Do It Now

BY BARRETT TILLMAN

iving history has a shelf life, and the expiration date cannot be extended. I've been interviewing WW II veterans since the early 1970s when I got serious about writing history, and it's been a bit-tersweet experience. Anyone who's made a career documenting aviation (or anything else) will tell you the same thing: you make older friends who become almost like family, and you know that you're going to lose them.

That knowledge does not make the inevitable losses much easier. The rate of attrition among WW II veterans has accelerated immensely of late. Four of my books provided a fairly reliable "howgozit" on the mortality scale.

When *Clash of the Carriers* was published in 2005, 25% of the contributors were already deceased. In other words, one in

the first-person contributions from men who lived the events.

The most recent loss was intensely personal. Cdr. Alexander Vraciu, who became the Navy's top ace during the Turkey Shoot, was the ranking U.S. ace at the time of his death in January, age 96. Al and Kay practically became a second set of parents from the 1970s on, and I was fortunate to inherit five "Romanian cousins" as well. When Al departed the pattern he left about 82 living American aces of whom only 31 wore Wings of Gold, including four Marines.

When I attended the American Fighter Aces Association reunion three years ago, the median age was 90. In 2013-14 we lost 47 aces; two a month.

Other attrition is no better. We've seen the Doolittle Raiders reduced from the 63 who survived the war to three this year.

Of the 133 RAF "Dambusters" who flew the classic 1943 mission, 53 died attacking the Ruhr dams. Three were living last year.

Some units sustained 25% or more casualties throughout a combat tour. But attrition extends far beyond war zones. The Army Air Forces lost some 13,000 personnel just in Stateside training accidents. Postwar attrition continued, and not only from flying. Cols. David Schilling and James Jabara of WW II and Korean fame, respectively, died in automobile accidents. Two 8th Air Force standouts, Duane Beeson and John Godfrey, succumbed to disease at ages 25 and 36. Maj. Gen. Marion Carl, The first Marine ace and a record-setting test pilot, was murdered in his home by a piece of human trash who remains on Oregon's "death" row 17 years later.

Veterans of later wars also are thinning out. America produced 40 jet aces in Korea; seven remain today.

Unfortunately, because we're aviation oriented, we sometimes forget that vets of all persuasions are leaving us at similar rates. For every ace who passes, we lose tens of thousands of other fliers, GIs and swabbies who helped write the history we have inherited. The shelf life of history is so evident today because the shelves are rapidly emptying as our once-young

men reach their expiration date or survive a war to meet another tragic end. The most public of those in recent years was America's all-time top sniper, SEAL Chris Kyle. He survived four combat tours in Iraq only to be killed by a fellow veteran reportedly suffering from post-traumatic stress.

There's a philosophical difference among historians regarding the value of long-after interviews. Rick Atkinson, whose impressive works include his landmark trilogy of the U.S. Army in WW II, seldom conducts interviews. He has more confidence in contemporary accounts because they were fresh in the participants' memories. However, researchers and oral historians who interview veterans believe there's room for both. So there's always room for new information, new perspectives. There is, however, no room for procrastination.

Whatever your conclusions, whatever your preferred method of research—even if it's just sitting with a veteran uncle, one thing becomes absolutely clear with the passage of time: Do it now.

Tomorrow may not come. ✚



Raider crew for Plane Ten. As a teenager, *Flight Journal's* Editor-in-Chief knew pilot Richard Joyce (front, left) but had no idea he was a Raider, so never interviewed him.

four of the Marianas Turkey Shoot participants who survived the war had died in 60 years. It was a typical demographic for that generation.

Five years later came *Whirlwind*, the first one-volume history of all air operations over Japan. It made Amazon.com's overall top 40 list, but 40% of the veterans I consulted never saw the book. The rate of attrition had increased by nearly two-thirds between 2005 and 2010.

Then in 2012 I published *Enterprise*, the story of "America's fightingest ship." At least 53% of the "Big E" men I had known were deceased by then. For the first time, fewer than half the contributors to one of my books never lived to see the work.

Last year—2014—*U.S. Marine Corps Fighter Squadrons of World War II* was released by Osprey, my UK publisher. It occurred to me during writing that I no longer knew any WW II flying leathernecks. The last one was Col. Jim Swett, a Medal of Honor ace who died in 2009.

From 25% to 100% losses in nine years.

None of those books could be written today, at least not with



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